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MAGAZINE

Electronic BBS and Online Information Services



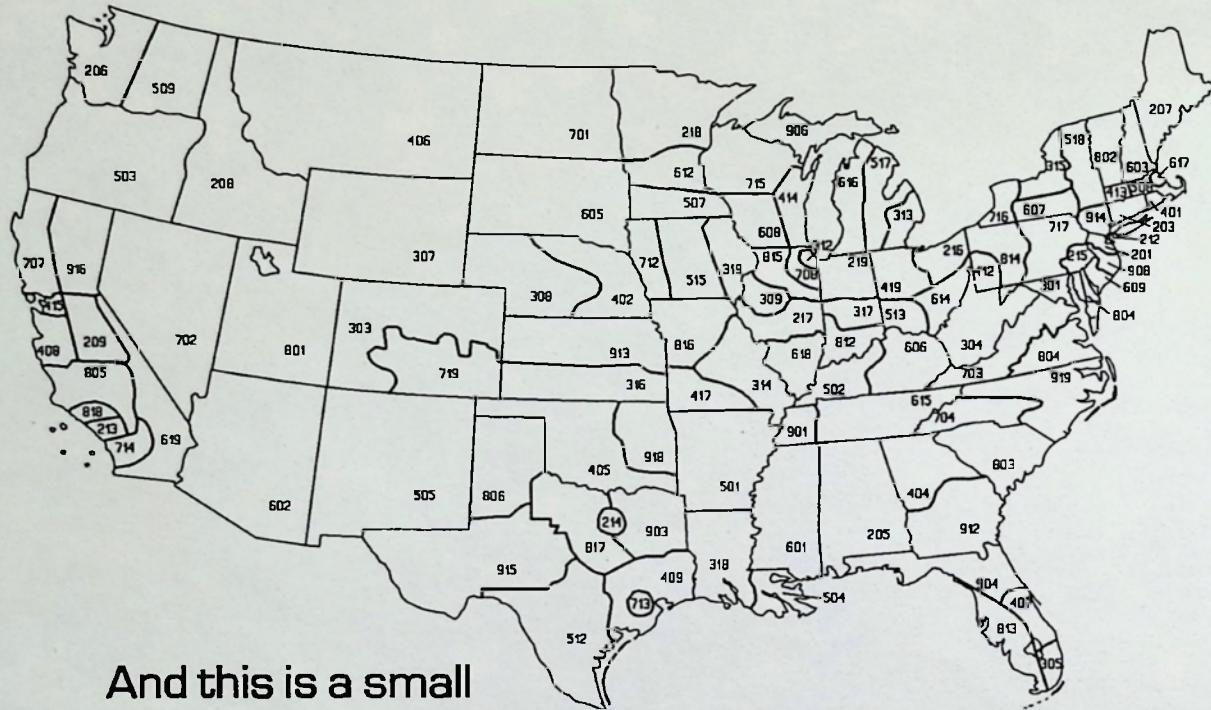
CONCLAVE 90 - PUTTING OUT THE FLAMES
George Peace - FidoNet 1:1/0 - Zone Coordinator for North America



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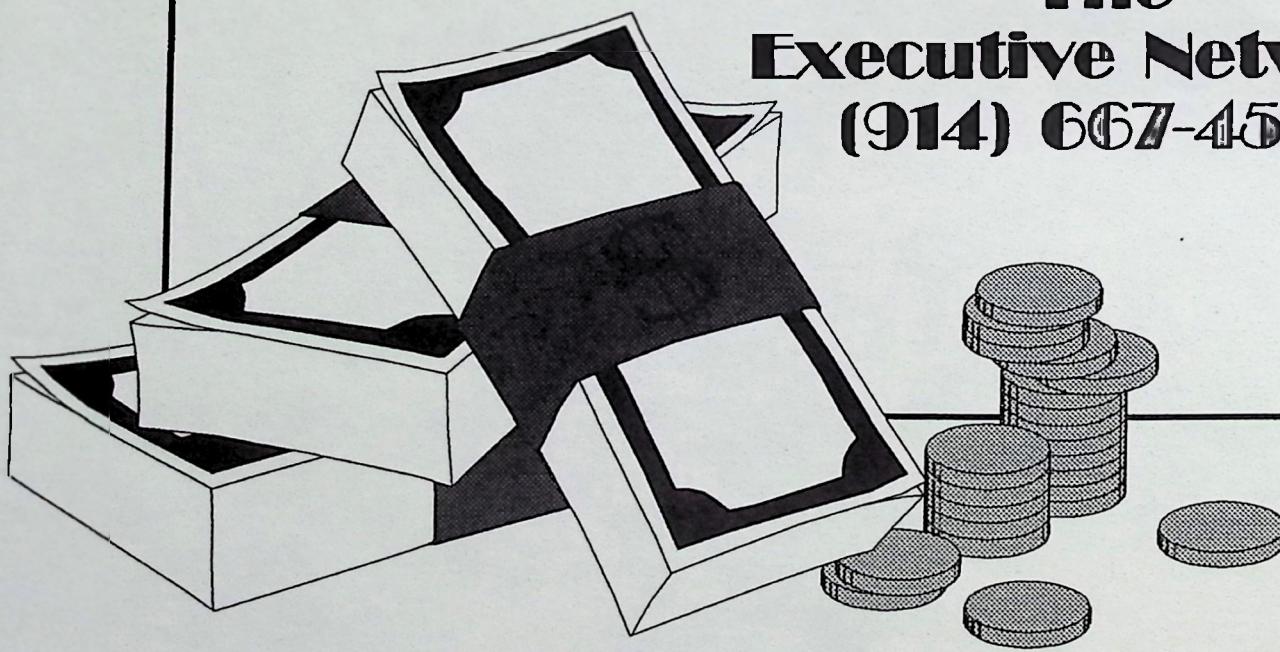
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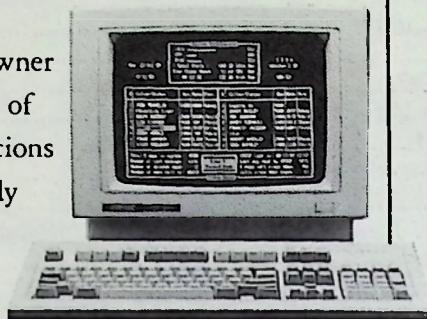
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EDITOR'S NOTES

I suppose this is our "FidoNet" issue. We attended the recent FidoNet/AlterNet/Egg Net/Phoenix Net conference in Lyndhurst New Jersey and came away astounded. The history of FidoNet has been marbled with controversy and disagreement. It is an entirely voluntary, entirely undisciplined group of avid hobbyists who have for the past six or seven years maintained a network that has never had any visible means of economic support, a rather arbitrary Coordinator structure patterned after the "your turn in the barrel" selection process, little documentation, no strong leadership, and not even a particular location. The conventions held more or less annually are typically attended by slightly over 1% of the membership. Yet FidoNet has grown from a single BBS to about 7600 world wide in six years. And even at the death throes of their one attempt at organization, the International FidoNet Association (IFNA), attendees were eating, drinking, making merry, playing with techno-toys, and generally making plans for another year of this madness.

Despite raging flame wars (messages containing negative commentary are usually referred to as "flames"), and a sort of accompanying raging chaos, FidoNet continues to thrive. The death of IFNA causes us to examine "what is this thing we have here."

PCs without connections are of limited power. Like the beings that operate them, they are inherently social in nature. And social animals seek connection to others of their kind. From individual callers dialing in the night to connect to a BBS, to BBS dialing each other to swap the nectar of information deposited by the callers, this urge to mate between personal computer systems is overpowering. We might posit that if FidoNet were wiped out overnight, it would reconstruct itself within days spontaneously. What is remarkable is that no one seems to be able to control it. The hive has a life of its own entirely different from the personalities and desires of those who might perform some of the organizational housekeeping. And despite the common paranoia

among member operators that someone at the top is trying to rule them and even profit from them, our experience observing the nominal "leaders" of the hive doesn't support that view. If anything, they are paralyzed by a driving desire to NOT appear to be impressing their will on the group - even if it means the end of the group.

And the software vendors who continually cry that FidoNet is not their market, that they are directed at commercial areas, and that there is no money in FidoNet, continue to produce remarkable things of use to the network and find ways to virtually give it away, all the while proclaiming their position as capitalists and privateers. This is precisely the reverse of the usual marketing technique of offering to give you something freely if you will only write a check. In FidoNet, the vendors swear they are going to take you to the cleaners and then practically give it to you anyway.

Since FidoNet has all the components of an organization that must disband immediately, and since instead it continues to grow wildly, let's hypothesize that it is in fact a new thing and ask some questions about the society it derives from. Imagine an entire society that has been lied to so many times by so many of their leaders - in government, in corporate America, in the media, that they become completely jaded to lies - and leaders. They distrust their government because it lies to them, steals from the poor and gives to the rich, and then lies some more - read my lips. They distrust their employers who have insisted all along that they knew what was best for them and would always have a place for them when in fact, they knew nothing and could promise nothing - not even their own continued survival. They have bought so many consumer goods for all the wrong reasons based on advertising messages that so twist reality that no one believes any market presentation at all anymore. Whatever you're selling, it has to be a con.

Imagine that these people, completely conditioned to distrust any higher form of organization as being inherently bent on deceit and fraud, were suddenly empowered to operate individually and autonomously - if only in a selected area such as their bulletin board systems. They might prove to be enormously



protective of their freedom in that area and resistant to any infringement on it. Any attempt to impose the conventional, traditional, legal structure of a corporation such as IFNA would be utterly predestined to failure. And so of course, it failed.

The worrisome part of all this is that FidoNet might NOT be an isolated case. What if individuals gained increasing autonomy over other areas of their lives. What if they all went home from their jobs at the Fortune 500 and found ways to make a living economically as individuals from their homes and small offices. What if the paradigm of the corporate structure broke down and we became a nation of cottage industries, individuals and small firms all swapping and trading goods, money, information without the structures of the past?

Already the trend toward working from home has reached a noticeable result with as many as 30 million individuals working from home and probably double that working in small organizations of 3 to 10 people. Corporations are foundering in their traces. One by one, different areas typically served by large corporate structures are proving not nearly so invincible as once thought. Savings and Loans, Real Estate empires, now defense contractors are struggling. McDonnell Douglas is currently notifying 17,000 individuals, many of whom have toiled faithfully in

the corporate vineyard for 10 or 15 years, that between now and the end of the year, they are no longer affiliated with the castle. Take your hoe and go home. Did you think the S&L crisis was bad? What they're not telling you is the imminent failure of a number of large banks could make the \$500 billion bail out of the S&Ls look like a side note.

These are not doomsday predictions of catastrophe. The world isn't ending - it's changing. In these changes, economic dislocations of individuals and institutions occur - but the hive as a whole can thrive. But, our taxation and governing structure is based on the economic blackmail of these corporations and the discipline they in turn exercise over their serfs. If the serfs leave the castles, how can the king govern the land through his barons? Governing organizations must have some leverage over the governed. You can't govern 250 million people directly on an individual basis. Simply funding our government is based on preemptively confiscating the taxes from the serfs before they get their hands on it through payroll withholding administered almost entirely by the corporate employers. Thus, tax collection becomes largely the responsibility of the private sector. If every man was his own employer, our Internal Revenue Service would have to become the nations largest organization just to collect the taxes.

The technology that has empowered individuals in small ways observable in an organization such as FidoNet might perhaps be working even now to empower individuals on a broader level as well. And much as IFNA failed in FidoNet, our conventional organizational structures are threatened as individuals do gain more power and autonomy through this technology. We would present that our society and economy is headed for some dramatic changes in the future. Changes that dramatically enhance the power of individuals at the expense of the state not only in Europe and Asia, but here in America as well. The sins of our past leaders, who have lied so long and ardently that we doubt they actually know the difference between the true and the false, will be visited on their sons. In a way, government is a confidence game. And if no one has any confidence, the game is over.

A very good friend of mine once proposed that government be financed by a national Jerry Lewis Telethon. The budget would be approved by October 1. On January 1, all TV in the United States would be cut off and we would be subjected to a series of aging movie stars pleading into the camera for individuals to send in money to support the government. Everyone would make voluntary contributions and could even earmark their contributions for a particular budget line item. Once enough money was received to fund our nation, we would return to our normal video programming. Ridiculous idea. Isn't it?

FidoNet is an experiment in non-government - essentially in a new kind of organizational chaos theory. It's future will be interesting to observe. So much more so in that it may be the future of us all.

CORRECTIONS

In our last issue, we described a BBS operated by Network World. In the article we noted that Network World was a publication of CW Communications. Actually, while it at one time was a publication of CW Communications, it was spun off several years ago as part of International Data Group. We're also informed by Jeff Pennett of IDG, that Network World is enormously knowledgeable regarding the use of 9600 bps modems.

In our last issue, Mike Callahan reviewed the new QModem 4.2. We had visited Mike at his Elizabeth Colorado home and saw QModem 4.2 in operation. However, it would appear John Friel did not release the program as promised and it is not currently available for download.

CONCLAVE 90 - PUTTING OUT THE FLAMES

The Conclave 90 Convention was held in Lyndhurst New Jersey August 1 through the 5th. And a good time was had by all. The convention brought to-

gether some of the top people from the international FidoNet network, and for the first time, members of a variety of alternate networks based on FidoNet technology.

This years convention was hosted by regional Net 107. A total of about 90 representatives from various regional nets from across the United States as well as Australia and Holland attended the event. This particular convention marked something of a watershed in the history of Fido and compatible networks. While offering the usual entertaining elements of intrigue, suspense, surprise announcements, and historical reflection, this years event was relatively quiet and seemed to reflect a maturing of either the network or the individuals involved with the networks. Billed as "A New Beginning", it would appear that peace is about to break out in the PC networks - hotel fires notwithstanding.

Uniquely, this convention was not limited to FidoNet alone. Over the past several years, sometimes bitter disputes within FidoNet have led to the development of splinter networks. The first among these was Alter Net but it was soon followed by EggNet, Network, and PhoenixNet. Individuals left FidoNet, usually in the midst of fairly vitriolic "flame" message wars and started their own organizations. At Conclave 90, representatives from FidoNet, AlterNet, PhoenixNet, and EggNet all attended and most of the sins of the past seemed forgotten.

In a midnight meeting in the traditionally requisite "smoke filled room" representatives from the various networks met at a "summit meeting" to discuss some of the issues of communications between the various networks. Among the attendees pictured from left in the accompanying photo:

George Peace of Harrisburg PA,
FidoNet Zone 1 Coordinator 1:1/0

Fabian Gordon of Milltown NJ,
AlterNet AND FidoNet 1:107/323

Bill Van Glahn of Lyndhurst NJ,
EggNet Proxy 1:1/90

Thom Henderson of Clifton NJ,
AlterNet and FidoNet 7:5201/1015



Bennett Griffin of Lawrence KS,
PhoenixNet 9:100/1

Chuck Gorish of Philadelphia PA,
PhoenixNet 9:100/2

Karl Schinke of West Milford NJ,
Archduke of AlterNet 7:7/0

Ben Baker of East Alton IL,
Grand Wizard AlterNet 7:44/76

However much individuals may want to form independent networks, as soon as they do, their members inevitably start plotting ways to pass mail between the nets. This causes some technical difficulties in "gating" mail between networks. The meeting was actually quite convivial. Though strained in the early moments, most found their concerns common to the group and they did agree to establish a groupmail conference among their systems to act as a liaison round table for discussing electronically ways to deal with technical and administrative issues between networks.

Among items discussed more casually, and with no resolution:

DOMAIN ADDRESSING. The consensus seemed to be that the current zone number method of addressing netmail has some problems. As additional networks are borne, the zone method will become increasingly clumsy. Domain addressing would provide a more flexible method of adding networks. Essentially, the zone method of addressing a system (1:104/555 for Zone 1 FidoNet; Net 104; Node 555) could be replaced by a domain address similar to that adopted by Internet (104/555@fidonet). This would require some changes in the mail software used but if vendors could be persuaded to support domain addressing, nearly everyone thought it would be a good move.

GROUPMAIL. There was some spirited discussion of GroupMail. Essentially, GroupMail is an alternate to Echomail for networking message conferences. GroupMail works by forwarding all individual messages in a conference to a single TOP STAR system run by the conference moderator. The TOP STAR system then publishes, at periodic intervals, a packet containing the latest edition of the GroupMail conference. This has a couple of advantages. Foremost is that anyone can pickup the packet from any system carrying the

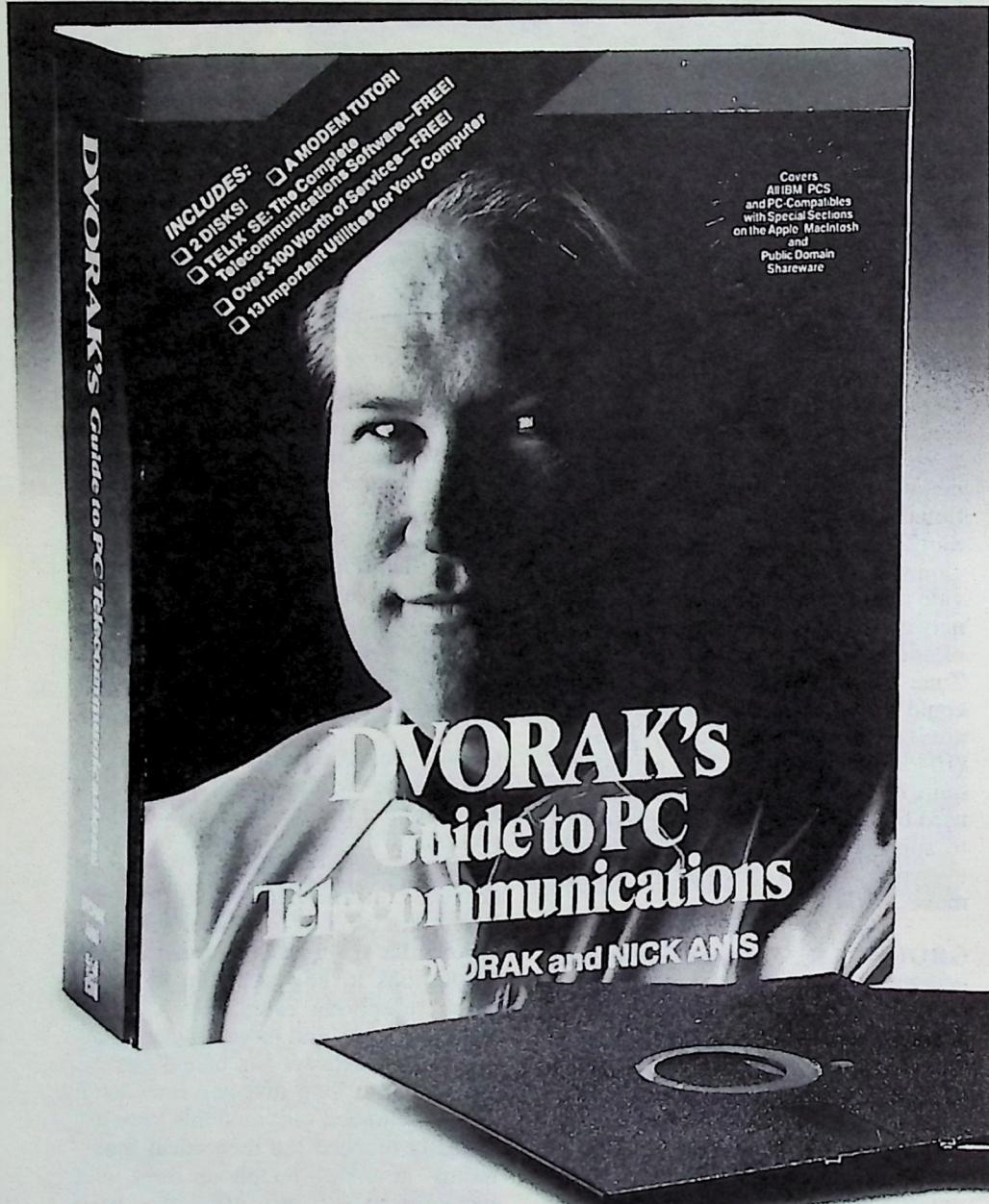
conference. Routing is somewhat simplified in that there is no possibility of duplicate messages within a groupmail conference. Messages and their replies always appear in the proper order. And finally, the groupmail concept reduces traffic and processing time. Packets are not produced on a tailored basis. As a result, mail hubs don't have to hold a copy for each system receiving mail from them as done in echomail.

Rather, a single packet is produced for all systems in that conference and simply transferred on demand. On the down side, systems who carry large numbers of conferences on their system will receive a large number of small packets during their mail session from their hub rather than one large packet containing all conferences. The mail transfer is actually much more efficient passing one large file than many small ones.

George Peace, Zone Coordinator of FidoNet for North America, while not advocating a change from echomail to groupmail did make several observations about the technical future of shared conferences. According to Peace, the level of backbone traffic in echomail is again reaching troublesome proportions. In the past, falling long distance telephone rates, much faster modem speeds, and more efficient mail processing software has bailed out the network. But long distance rates have nearly bottomed out, modems have essentially reached the theoretical maximums on analog telephone lines, and increases in software efficiency have reached the point of diminishing returns. As a result, none of the traditional

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technological solutions are going to bail out the network in the future. Some solution must be devised administratively.

In addition to the "summit" meeting, there were a number of other activities at Conclave 90. Most notable was the death of the International FidoNet Association (IFNA). IFNA was a non-profit corporation setup about five years ago at the first FidoNet Convention in Colorado Springs Colorado to serve as the legal identity and contact point for FidoNet. The corporation suffered from a couple of notable drawbacks. There was no particular advantage to FidoNet system operators to join the organization. Membership in IFNA was not required to be in FidoNet itself. As a result, the organization never received a strong participation from the network rank and file members. It was generally underfunded from the beginning.

At Fidocon 89 in San Jose, members voted to submit the fate of IFNA to a vote of all FidoNet system operators. At the close of voting, about 30% of the net actively voted to retain it. Lacking a simple majority, the board of directors voted to dissolve the corporation. At Conclave 90, an IFNA membership meeting voted to do so and subsequently, an IFNA Board of Directors meeting also voted to dissolve it. Approximately \$3000 in remaining funds were contributed to the Tomorrow's Children organization which assists parents of children with cancer. The corporation released any copyrights it had to Fido News and the FidoNet Nodelist to the public domain. While many of the original supporters of IFNA were saddened by its passing, they seemed genuinely relieved that the ordeal and controversy of the organization was over. IFNA had finally fallen on its sword.

At the Conclave 90 banquet, Ben Baker rendered a historical account of FidoNet from the early days to the present. Mr. Baker was the tenth system to join Tom Jennings network of Fido operators back in 1984 and related some interesting history. A number of door prizes were awarded including a U.S. Robotics HST Dual Standard modem, a 16-line version of TBBS software, and a complete 80286 BBS machine.

Various vendors presented their wares. Phil Becker demonstrated a 16-line TBBS system on a 16 MHz NEC PowerMate portable computer with a series of laptop computers connected to the system by null-modem cable. Attendees were appropriately wowed by the simultaneous 9600 bps FidoNet mail sessions allowed by eSoft's new The Integrated Mail System (TIMS) expansion module - the first multiline mailer. While Bob Hartman played StarQuest furiously as a regular caller, several others performed mail file requests which TBBS and the PowerMate handled without even noticeably loading the machine's performance monitor.

Bit Bucket Software announced availability of their BinkleyTerm mail software version 2.40 with a new bi-directional protocol. Hector Santos was on hand to demonstrate his Silver Express offline mail reader and Fax Express fax transmission module. Hector ran into a bit of a difficulty in that numerous system operators wanted to see Fax Express demonstrated. But each time he did, the hotel charged him another \$10 for an incoming fax. Thom Henderson announced availability of Version 7.0 of ARC. This version is commercial software and not available for distribution on BBS - not a popular move among BBS operators if you can picture it.

A FidoNet coupe was staged. An appropriately amateurish Fight-O-News! page was produced announcing that Robert Moravsk had taken over Fight-O-Net and was not-so clandestinely distributed by a thoroughly inebriated Joaquin Homrichausen, author of the mailer software package FRONT DOOR.

On Saturday, a fire broke out in Room 218 of the Quality Inn where the convention was held. The Lyndhurst Fire Department deployed their finest causing endless comment about an actual fire department had to be called in to put out the "flames" from the FidoNet convention. Everyone evacuated the building and it afforded us an opportunity to take our cover photo - George Peace, FidoNet 1/0, the top of the heap, posing in front of the fire truck - a proper closing note.

Next year's convention is planned for August 8-11 in Boulder Colorado.

TELEBITS

RUMORS, MIGHT BE'S, NUMBERS CAUGHT IN PASSING

Terminology: A new breed of online computer nerd - netwirps. dBASE IV Version T.1.M.W. This 1 Might Work.

Apple Computer has birthed an offspring - General Magic Inc. Headed by Bill Atkinson, inventor of Apple's Hypercard software, the new firm is rumored to be working on connection devices for PCs - wireless and cellular by all reports.

Part of the East/West Germany equation involves East Germany's antiquated telephone service. West Germany sports 30 million telephones serving 60 million people while East Germany has 1.8 million serving 15 million people. Worse, most of the East German switches are 30 to 60 years old. It can take 20 years to have a telephone installed. Highly prized leased lines typically operate at 1200 bps - half duplex. The West German post and telecommunications ministry is planning a \$33 billion upgrade to the infrastructure including 7 million new connections, 60,000 leased lines, 360,000 fax connections and more installed between now and 1997. Who's paying for all this? West German subscribers are seeing some real increases in rates. But it's still not bad, the installation charge tripled - to about \$16.

Dataquest Inc. claims notebook sized laptop computers sales will grow at a compound annual rate of 76.5% through 1994 - six times faster than the PC industry as a whole.

Howard Benner, author of the shareware program TAPCIS used to automate mail for CompuServe subscribers, passed away June 8 from complications of malignant melanoma.

You thought 900 lines a loser? According to *The New York Times*, 900 numbers logged 320 million minutes at an average charge of \$0.73 per minute. The take is expected to DOUBLE in 1990 to a round half-billion dollars.

Hitachi Ltd. has introduced a 35 Gigabyte hard disk drive unit for its H-6587 mainframe computer.

Ventura Software Inc. introduced a version of their popular Ventura Publisher desktop publishing package for the Apple Macintosh computer on August 8. The Macintosh Edition includes a spell checker, undo functions, and extensive online help screens for \$795.

Intel's Personal Computer Enhancement Operation is rumored to be preparing a line of modems incorporating V.32 and V.42bis based on a new Intel modem chipset at some very attractive prices. They were shooting for a September release.

The Senate Commerce Committee has approved legislation allowing the Regional Bell Operating Companies to carry video into homes. So far, the Bells are still banned from producing video, but they can act as carriers. In effect, if this legislation passes the full Senate, the Bells will be able to compete with the cable TV firms. The positive aspect of this is that it would likely drive the move toward installation of fiber-optic lines by the telcos. There is simply no overriding need to do so for voice transmission and the volume of data transmission is still 30 years away from driving fiber installations in the local loop. But if fiber is installed to carry video, it will be inherently capable of carrying extremely high speed data as a by-product. NYNEX and several other RBOC, on the other hand, are also experimenting heavily with the spread-spectrum Personal Communications Network cellular technology we covered a few issues back. Cellular is popular in telephone now. It will get MUCH bigger. Portrait of the future? TV, once distributed solely by radio transmission, is likely to come to homes primarily by wire maintained by cable TV and telephone companies. Telephone, once solely delivered by wire, is moving toward cellular radio transmission as a medium. Does this make sense? You bet. Video transmissions require massive chunks of radio spectrum bandwidth. Voice and data, comparatively less. Literally billions of cellular telephone voice conversations could be handled in the same spectrum band width now allocated television. Further, mobile telephone, which requires radio,

is much more useful than mobile television, an inherently indoor sport that virtually requires a couch, refrigerator, corn popper, and plumbing facilities to play at anything approaching the professional level.

CALLER ID TROUBLES

One of the most popular features of the new services being offered by telephone companies is Automatic Number Identification. ANI presents the called party with the telephone number of the calling party as soon as the telephone rings. Numerous telephone companies are introducing the service in areas throughout the country. The latest - Chesapeake and Potomac Telephone asked the District of Columbia Public Service Commission for permission to offer ANI. The Commission responded by requiring the telephone company to offer a caller ID blocking service as well allowing callers to block the transmission of their telephone number. Under C&Ps revised proposal, callers pay 45 cents to block calls by dialing 0 before the number. This would reroute the call through the operator who could block the ID.

The ANI debate is quite the rage. While proponents of the service argue that it would enhance personal privacy by giving the called party the priority on privacy and the caller, who essentially controls the transaction, the responsibility for identifying themselves. But opponents argue that individuals calling businesses will be forfeiting their privacy to giant databases and they will then receive endless sales calls. Our position is that there are few transactions you can carry on with any business by telephone without coughing up your telephone number anyway. If sales calls are a problem let's legislate THEM out of existence - not ANI. Meanwhile, eliminating the current technological guarantee of anonymity would essentially eliminate obscene telephone calls, bomb threats, telephone harassment, false fire alarms, and assorted heavy breathers.

But the opponents to ANI seem to be winning. A group including the Pennsylvania Coalition Against Domestic Violence and the American Civil Liberties Union of Pennsylvania filed suit against the Pennsylvania Public Utilities Commission seeking to reverse approval of Caller ID service within Penn-

sylvania. In a May 30 opinion of the Commonwealth Court of Pennsylvania written by Judge Doris A. Smith, the court found that Caller ID service, even with a call blocking option, violated both the Pennsylvania Wiretap Act and Article I Sections 1 and 8 of the Pennsylvania State Constitution. Essentially, they ruled that the Caller ID service offered by the telephone company posed a substantial invasion of the personal privacy of the citizens of Pennsylvania.

Meanwhile, Senator Herbert Kohl, a democrat from Wisconsin, has introduced a bill titled Telephone Privacy Act of 1990 that would amend 1986 federal wiretap laws to permit caller ID - effectively legalizing caller ID nationwide. However, the bill calls for a requirement that telephone companies offer call blocking in concert with any caller ID services. The Senate Judiciary Committee is currently hearing testimony from AT&T, Bell company officials, consumer advocates, the American Civil Liberties Union, and the Direct Marketing Association on the matter. In the House of Representatives, Representative Robert Kastenmaier, also a democrat from Wisconsin, has introduced a similar bill. No hearings have been scheduled in the House as yet.

California and several other states have already allowed Caller ID but have also passed laws requiring call blocking. In effect, this seems to be the model that is emerging. And a number of telephone companies, while admitting that call blocking reduces the effectiveness of caller ID, already see which way the wind is blowing. Most are offering no-charge call blocking functions.

It would appear that caller ID or ANI will become available nationwide to provide us with the telephone number of anyone that calls, unless they don't want us to know who they are or what number they are calling from. And while we welcome caller ID, the call blocking solution appears a bit wimpy. There remains a technical solution for that, a telephone set that only rings if an incoming caller ID is received...

Ironically, the Senate is seriously considering exempting the call blocking function from working when calling 800 or 900 service numbers. Effectively, this guts the oppositions one le-

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Boardwatch
Magazine
12/89

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gitimate concern about businesses collecting numbers for sales purposes. You would be able to block transmission of your telephone number if you want to make an obscene telephone call. But you wouldn't be able to when calling a business that uses an 800 number???

CODEX INTROS ISDN ADAPTER FOR PC

Codex Corporation has announced a product to match IBM PC compatibles to the new Integrated Services Digital Networks (ISDN) telephone service. The 8860 ISDN Basic Rate Interface Terminal Adapter is an external box that connects to an ISDN basic rate interface telephone line. These lines provide two 64 kbps lines and a single 16 kbps line. As an external unit, the 8860 is much more flexible than the internal circuit cards that have made up the bulk of ISDN terminal equipment for PCs. The box provides RS-232 serial ports allowing connection to PCs as well as connections for other popular telephone devices. The product uses a Motorola 68000 microprocessor and is priced at \$1995. Codex, 20 Cabot Blvd., Mansfield, MA 02048; (508)261-4000.

BRIDGE CONNECTS APPLETALK NETS VIA ISDN

Solana Electronics has introduced a network access bridge device to connect Appletalk networks at 64 kbps via Integrated Services Digital Network (ISDN) lines. By installing one of these devices on each of a pair of Appletalk networks in different geographic locations, the two LANs can share information between them at 64 kbps. The devices are termed ISDN H-Servers but they're not cheap at \$3195 each. Solana Electronics, 4709 Morena Blvd. Suite 1404, San Diego, CA 92117.

COMMUNICATIONS CONNECTIONS 91

Rich Thoma & Associates is putting on a data communications show in San Diego February 24 to March 1 at the Town and Country Hotel in San Diego. The conference will include presentations for cottage industry infopreneurs, telecommuting in the 90s, LAN connectivity issues, Integrated Services Digital Networks and advanced telco applications such as T1 and Switched 384 kbps.

The show and conference is titled Communications Connections 91. It will run concurrently with an ISDN Users Forum conference being held the same week in the same hotel. There will be High Definition TV demonstrations and Northern Telecom will have their ISDN van on site to provide connections for various displays. According to Thoma, about 50 exhibitors have already signed up seven months prior to the event. Interest in data communications appears to be dramatically on the rise. To register or for more information, contact Dimensions, 555 Twin Dolphin Dr. Redwood City, CA 94065; (800)562-7062.

FIDONET CONNECTION FOR APPLE MACINTOSH

The Apple Macintosh has proven to be a very popular desktop computer. But it has not yet reached its full potential as a communications machine. Numerous Macintosh user groups around the country operate electronic bulletin boards, but often the BBS is actually run on an IBM clone of some type. Until recently, the Macintosh has just not en-

joyed the rich set of communication and BBS software programs available for IBM machines.

That is slowly changing. There are now a half dozen BBS software programs available for the MAC, including Mansion, Red Ryder Host, and a version of WWIV for the Macintosh among others.

Likewise, connecting the existing Macintosh BBS systems to the International Fido Network has not been a trivial task. But there is one software program we know of that does allow Mac BBS operators to connect to FidoNet and exchange echomail conferences and netmail. The product is titled TABBY and it was created by Michael E. Connick of Bradley Beach New Jersey.

TABBY provides the necessary mail handling interface for Mac BBS operating under Mansion, Red Ryder Host, or WWIV Mac software. The program handles all mail chores necessary to send and receive netmail and port echomail conferences to the Macintosh. TABBY Version 2.1 is available at \$80. TABBY has actually been around in various versions for nearly three years.

Mr. Connick operates a BBS on a 512K Enhanced Mac with 2 MB of RAM and a 45 MB hard disk using a U.S. Robotics HST 9600 bps modem. The system runs under Mansion Version 8.0 BBS software at (201)988-0706. It is also net 107 node 412 in FidoNet. M.E. Connick and Company, P.O. Box 307, Bradley Beach, NJ 07720.

MIT EDUCATION OUTREACH

The attraction telecommunications technology holds for our educational institutions is strong, if a bit uneasy. Many educators are not knowledgeable and in many cases not comfortable with online technology. But clearly it is a concept whose time has come and there are champions of the technology within the ranks of educators.

One area of national concern is mathematics and science education. Some are now estimating that 74% of our engineering students are now foreign born. Further, advances in some scientific disciplines are now so rapid that textbooks

aren't available and teachers in the field just a few years lose contact with current scientific advances.

A few months ago, we received a call from George Johnston of the Massachusetts Institute of Technology Plasma Fusion Laboratory. He wanted to know who was involved in education online. We put him in touch with Dave Hughes who has very strong interests in both telecommunications and educational issues. Dave had installed the Big Sky Telegraph system operating at (406)683-7680 in Montana to connect a series of one-room school houses by modem.

As it turns out, Dave was teaching an advanced course in telecommunications online to ten School District 11 teachers at the time. The two got together to develop a means of extending knowledge from the research field to the high school classroom using telecommunications.

Part of the push to develop the Internet system linking University computer systems across the country was the growing interest among researchers in online technologies as a means of collaboration. Today's breakthroughs are often the culmination of dozens of smaller discoveries. In the past, scientific researchers compared notes via physical gatherings at symposiums or through printed journal publications of their work. Electronic conferencing has allowed researchers to share information and results online without physically flying to another city or waiting for printed journal publications to publish findings. As a result, this modern form of electronic collaboration has become a key element in the rapid developments in a number of sciences.

Hughes and Johnston wanted to extend this collaboration to the high school class room. In this way, tomorrow's researchers might not only learn the most current thinking in a scientific field, but also learn the techniques of online collaboration they will use in the future.

The result is a pilot program to teach science and mathematics online from MIT to high school classrooms. The first course will be taught by George Johnston on the relatively new science of chaos theory. Communication will be performed by telephone using FidoNet

BBS technology to link nodes at MIT, Dave Hughes Gold Mill BBS 128/67 in Colorado Springs, the Air Academy High School's Rivendale BBS 128/17 in Colorado Springs, and high school's in Butte and Carter Montana through the Big Sky Telegraph system. The class is scheduled to begin September 15.

Key to the success of the program has been the enthusiastic participation of several educators, themselves involved in online issues. Ron Place of the Air Academy High school actually runs their FidoNet system in Colorado Springs. Herb Sweat of Coronado High School in Colorado Springs has been involved with computers in the school for a number of years. Ruth Hallstrom heads the Montana Teachers for the Gifted and Talented. About a dozen gifted students will be involved with the program initially.

Dave's Old Colorado City system will carry the course in a conference titled CHAOS at (719)632-4111. Dave will grant read-only access to the conference to interested parties. The first to sign up for that were the ten teachers from his Advanced Online Telecommunications class. There will also be an MITNET conference for active discussion of the pilot program.

One of the problems incurred in teaching any number of subjects online is the limitations of the ASCII character set. Dave is pushing for development of graphics software based on the North American Presentation Level Protocol Syntax (NAPLPS) standard. Currently, members of the National Science Foundation have taken a considered interest in the pilot program. MIT is preparing a grant request that would fund development of low cost shareware programs to act as NAPLPS terminal and frame creation programs to allow students and teachers to communicate advanced concepts, mathematical equations, foreign language characters, etc. graphically. Terminal programs for IBM PCs, Apple Macintosh, and Apple II GS computers are planned. If they are successful in doing this, it could point the way for the BBS world to finally advance beyond character-based ANSI graphics to a true graphics standard usable online.

A variation on NAPLPS is currently used by the IBM/SEARS PRODIGY online service as well as the Canadian

ALEX online service. NAPLPS is a published, public domain graphics standard and is specified in the Open Systems Interconnection (OSI) model that guides development of future data communications models. The Government version of OSI, termed GOSIP, is required for all procurement after August 15, 1990. The problem with NAPLPS is that there is currently no reasonably priced terminal programs or screen drawing programs available to use it. The frame creation programs used by information providers on ALEX, for example, are quite pricey and the market is very small. If MIT develops low cost or public domain NAPLPS tools, it might very well be just what's needed to get NAPLPS into gear as an online graphics standard for BBSs.

GENIE ADDS EUROPEAN VERSION OF TRADEWARS GAME - SEARS CATALOG

General Electric's GENIE Online Information Service has recently added another multi-player online interactive game program. Federation II, purported to be the most popular online game in Europe, is now available on GENIE.

The program, a combination of a role playing game and a space commerce game, is somewhat similar to the very popular Tradewars game available on many electronic bulletin board systems. Each player designs a spaceship, selects various personal attributes, and sets out to conquer space by trading, warring, or cooperating with other players. An online manual can be downloaded complete with a map of the galaxy.

The service has also added an online catalog of products from Sears, Roebuck and Company to their mall area. The new catalog offers online ordering of more than 1500 Sears products in home electronics, home office, videotapes, video games, and special value promotions. Additionally, any item in any Sears print catalog can be ordered online and paid for by SearsCharge or Discover card. The order will be shipped UPS or picked up at a local Sears store.

GENIE currently claims 206,000 individual subscribers. The service is rumored to be planning a dramatic price cut for this autumn. The 2400 service, currently \$10.95 per hour, will be re-

duced to \$6 hourly. Further, there are repeated rumors regarding a flat-rate package where callers pay a flat fee (perhaps \$4.95?) for unlimited access to a package of services. If true, the new rate structure could vault GENIE to an entirely new position among online services. GE Information Services, 401 N. Washington St., Rockville, MD 20850; (800)638-9636.

i486 MICROPROCESSOR PROGRAMMER'S MANUAL

Osborne/McGraw Hill has announced publication of the *i486 Microprocessor Programmer's Reference Manual* prepared by Intel Corporation, manufacturer of the microprocessor. The book discusses application programming, system programming, numeric processing, compatibility with earlier processors, and a detailed instruction set. The book is 896 pages and available now at \$24.95. Osborne McGraw-Hill, 2600 Tenth Street, Berkeley, CA 94710; (415)548-2805.

BBS REVIEWERS WANTED

Did you ever want to write your own reviews of online services? Quality Review Service (QRS) is seeking individuals to work as reviewers of on-line information services operating as part of the NYNEX InfoLOOK Gateway service in New York City, Boston, and Burlington Vermont areas. The service to NYNEX is administered by Issue Dynamics Inc and pays a modest fee for each review plus online charges. Would-be critics can contact Jacci Gruninger, Issue Dynamics, Inc., 901 15th St. NW, Suite 230, Washington, DC 20005; (202)408-1400.

U.S. ROBOTICS RACKMOUNT 32 AVAILABLE

U.S. Robotics has announced availability of their new Rackmount 32 modem chassis. The new rackmount can hold up to 16 modem cards and the company now offers a dual 2400 bps modem card allowing up to 32 modems to operate from a single chassis. At \$1095, the rackmount provides a backplane and one power supply. A redundant power supply option is available at \$495. U.S. Robotics Dual Standard rackmount cards are priced at \$1295 each.

The Rackmount 32 can be upgraded to add the "Total Control" Modem Management Products available this coming November. Total Control provides a software program and hardware to allow you to monitor your network of modems from a single PC terminal.

A configuration with 16 Dual Standard Modems and the redundant power supply unit would cost about \$22,310 and provide connections at rates up to 14,400 bps.

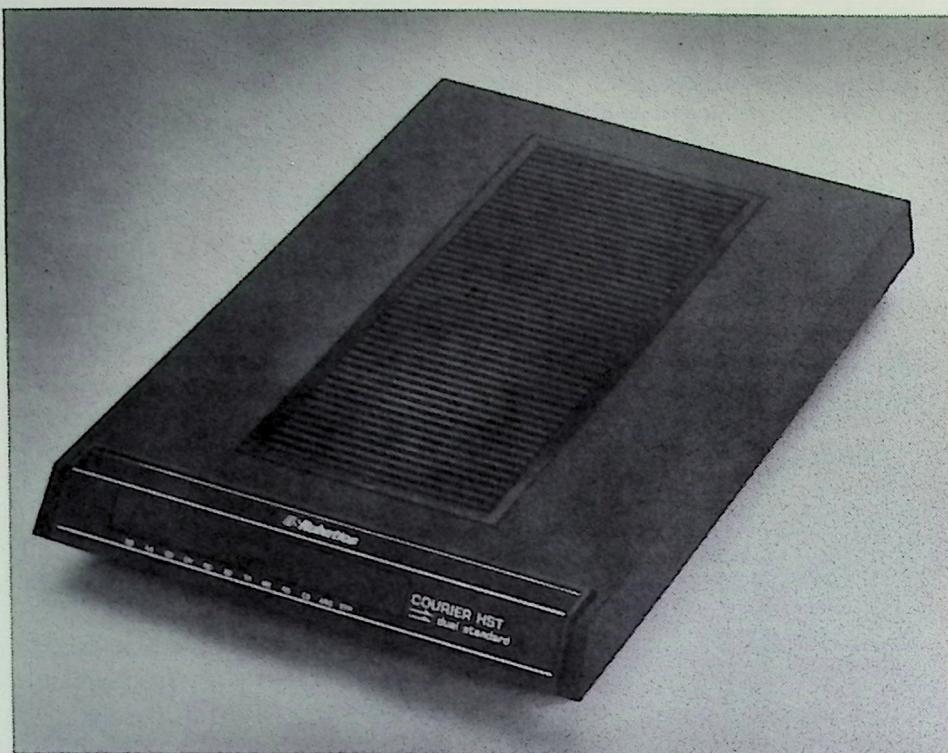
The company also announced they were adding the Microcom Networking Protocol (MNP) levels 1-5 to their low-end Sportster 2400 line of modems. The price of an external Sportster 2400 MNP will be \$299 while an internal circuit card for IBM PCs will be available at \$249.

Dan Suffrin of U.S. Robotics addressed the recent Conclave 90 convention in Lyndhurst New Jersey and described a little bit of the history of U.S. Robotics and some thoughts on where the company is going in the future.

It seems five graduates of the University of Chicago got together in 1976 and decided to form a high technology company. The name U.S. Robotics was a direct lift from Isaac Asimov's science fiction novel *I Robot*, one of his better works by the way. In the story, a company named U.S. Robotics developed robots with the positronic brain and grew to become the largest company in the world.

The group fumbled around with some terminals and other oddities before designing a modem in the early 80s. In 1983 they received a big boost when they were tasked with making modems for both Apple Computer and Commodore. In 1984 they introduced the Courier 2400 and in 1986 they introduced the Courier HST 9600.

At that time, the V.32 standard had already been established by the CCITT. The problem was that the technology to implement full duplex 9600 bps transmissions was extremely expensive at the time - \$3500 and up. The reason for this was some fairly exotic circuit requirements for echo canceling. When transmitting and receiving data simultaneously at 9600 bps, it is important for obvious reasons to keep track of which



U.S. Robotics Courier HST Dual Standard Modem

signal is going out and which one is coming in. It can be very easy to pick up your own outgoing signal as incoming data. To avoid this, the system has to filter its own output out of the incoming data stream. This is referred to as echo canceling.

To work around the problem, U.S. Robotics used a variant of CCITT V.29. V.29 was a half duplex method for transmitting data at 9600 bps - in one direction at a time - used by Group 3 facsimile machines. They called the method High Speed Technology - or HST. The modem could link in either direction at 9600 bps with the reverse channel operating at 300 bps. The channels could be reversed to respond to changes in data flow direction, but it could not pass data in both directions simultaneously at 9600 bps. For this reason, the expensive echo canceling circuitry was avoided.

U.S. Robotics modems won the hearts of the sysop community. Most modem manufacturers had ignored the BBS community as a bunch of pesky hobbyists who were far too cost conscious to form anything of a market. What they didn't realize was that BBS operators

played BBS primarily at night. By day, like everyone else they had jobs and they were often among the most influential "early adopters" of PC technology throughout corporate America. At the time, most of U.S. industry believed there was only one modem manufacturer in the world - Hayes. U.S. Robotics group of BBS operators were instrumental in turning that perception around.

Almost lost in the annals of BBS history is the fact that U.S. Robotics ran one of the very early Fido BBS systems in the country. They also offered the HST to system operators at a 50% discount and were the first modem manufacturer to do so.

Today, U.S. Robotics does offer not only a V.32 modem, but their popular Dual Standard modem as well. The Dual Standard upgrades the prior HST technology to operate at 14,400 bps while also implementing the 9600 bps V.32 connection as well in the same box.

According to Suffrin, there are some interesting things in the offing. The chipsets used to manufacture most 2400

bps modems now include a facsimile function as an option costing between \$5 and \$10. As a result, he believes that modems WITHOUT a fax function will be by far in the minority a year from now. USR sees a big opportunity in fax software.

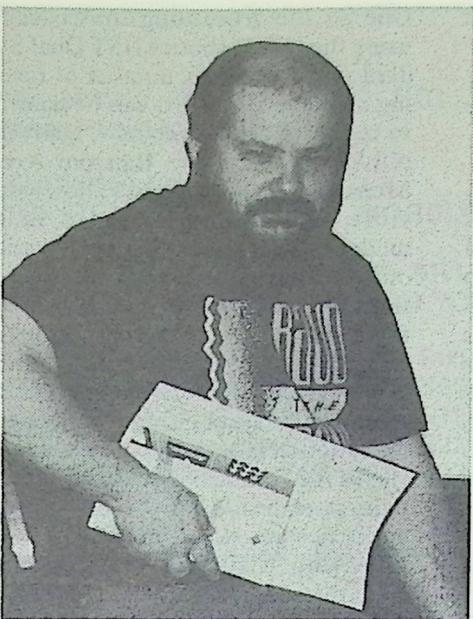
He also noted that CCITT has finalized a specification for V.32bis. V.32bis offers several improvements over V.32. Most notably, the transmission speed of V.32bis is 14,400 bps - half again as fast as V.32 at 9600 bps. As importantly, 9600 bps V.32 modems fall back to 2400 bps connection under poor line conditions. V.32bis will fall back to 12000, 9600, or 7800 bps as line conditions warrant. The chipsets for V.32bis should be available during the first quarter of 1991 and Suffrin noted that U.S. Robotics should be there with a competitive product.

Suffrin also went on to describe the advantages of their current V.42bis product. V.42bis provides error correction and compression to speed modem data transfer rates at any given modulation speed. In implementing the V.42bis functions into their existing product line, one of the engineers at USR, John Racima, had to dig pretty deep into the current firmware. Apparently, he found some fairly dramatic areas for improvement in the old code. Numerous reports of dramatically improved performance in USR HST modems after upgrading to V.42bis continue to surface and it is clearly not all due to V.42bis itself.

Finally, Cheryl Tyler, current administrator of USR's sysop discount program, noted that they will be upgrading their current Opus BBS support board to eSoft Inc.'s TBBS software by the time you read this. The new support board will run on two lines at (708)982-5092. U.S. Robotics, Inc., 8100 North McCormick Blvd., Skokie, IL 60076; 800-DIALUSR voice.

BINKLEYTERM VERSION 2.40 AVAILABLE

The BinkleyTerm trio, Vince Perriello, Bob Hartman, and Alan Applegate, of Bit Bucket Software, have announced release of version 2.40 of their popular automated mail program, BinkleyTerm.



Vince Perriello of Bit Bucket Software.

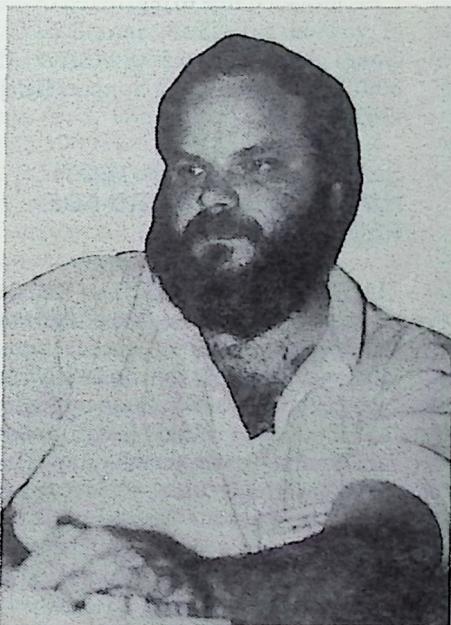
"Any echomail you can walk away from is GOOD echomail."

BinkleyTerm has enjoyed some popularity among FidoNet BBS operators. The program is modular, allowing operators to plug in various message editors, mail packers, node list processors, etc. in a very flexible fashion. Because it requires a series of such additional software programs to fully operate as a FidoNet mail system, the program is not widely regarded as appropriate for beginners. Installation can become something of a treasure hunt game. But long-time sysops find the flexibility very useful.

The program has two other advantages. While copyrighted, it is distributed free of charge for non-commercial use. No shareware registration fees are sought from hobby systems. Further, the program's developers make the C language source code available as well. It comes in three downloadable files: BBIG_240.LZH, BEXE_240.LZH, and BSRC_240.LZH. So, for technically inclined hobbyists, Binkley is very cheap, very flexible, and even modifiable.

The new release includes something a bit unique among mailers. A new protocol termed JANUS, developed by Rick Hubner, is included to provide bi-directional file transfers on full duplex connections. This allows two computers to connect in the night for a mail session and pass files and mail over the lines in both directions at once - theoretically with no degradation in performance either way. If traffic in both directions happened to be identical in volume, it would cut the connect time in half.

In actual practice, mail volumes are almost never comparable in both directions. And the JANUS protocol is not usable on U.S. Robotics HST modems in HST mode. The HST can be basically viewed as half-duplex - 9600 bps in one direction only, although a 450 bps back-channel does provide some capability. On the other hand, for those few systems who might make use of true CCITT V.32 9600 bps connections, JANUS will take advantage of the full duplex capability of V.32. If nothing else, the JANUS protocol will allow some interesting experiments. And for those limited to 2400 bps links, quite likely save some money.



Bob Hartman of Bit Bucket Software at Conclave 90: "Yes! 20,000 more StarQuest fighters and the Galaxy is MINE."

The Binkley Trio announced the release of BinkleyTerm 2.40 at the Conclave 90 gathering August 1-5 in Lyndhurst New Jersey. Bob Hartman and Vince Perriello had just returned from the recent FidoNet convention in Europe. While in Europe, they happened on a small regional brewery that produced a beer titled BINK - sort of a Dutch term for Macho. Fascinated by the name, they brought back a case of Bink to the States. They contributed some to the Conclave 90 banquet for door prizes. A tad astringent, and full bodied but tasty - not for the pale pilsner crowd. The bottles had a ceramic/cork topper held in place with a wire clamp - making installation a bit interesting. It fits the software. Bit Bucket Software support BBS 104/501 (303)693-4317.

256 LINE BULLETIN BOARD SOFTWARE RELEASED - THE MAJOR 5.11

Galacticomm, Inc. has announced the latest version of their BBS software program - The Major Version 5.11. Most notably, the new version supports up to 256 simultaneous users on a single 80386 or 80486 microprocessor IBM compatible machine.

The new software takes advantage of protected mode operation of the 80386/486 microprocessor to address large linear memory address space. The program requires an extended memory service program titled OS/286 from Ergo Computing to perform the feat.

In addition to the 256 port feature, The Major has attracted a following based on a very capable online chat function that has become popular among multi-line social systems. A number of third-party add-on programs enhance this feature with multiplayer online games such as poker, where callers actually participate interactively in real time to play. The program C language source code is also available allowing very flexible customization.

Optional add-on packages include four "extended editions" of the basic package. The File Library Edition includes file transfer protocols such as ZMODEM, YMODEM-g, KERMIT, and SUPERKERMIT for file downloads. The MenuMan Edition permits custom menus with ANSI

graphics. The Entertainment Edition offers a variety of multi-player realtime games and allows you to link systems in various cities to host nationwide online chats. Finally, the Shopping Mall Edition offers online order entry, catalog sales, and product information.

The four editions in full 256-port version, with C language source code, OS/286, and an X.25 packet switch option is priced at \$6126. A two line version of the Standard Edition is available at \$59. Galacticomm, Inc., 4101 S.W. 47th Avenue, Suite 101, Fort Lauderdale, FL 33314; (305)583-5990. Support BBS at (305)583-7808.

ESOFT SHIPPING VERSION 1.1 OF DATABASE EXPANSION FOR TBBS

eSoft, Inc. set August 15 as the ship date for version 1.1 of their The Data Base System (TDBS) expansion module. The upgrade is free to purchasers of version 1.0 regardless of when it was purchased.

TDBS made a bit of a splash in the online world by providing the first dBASE III PLUS compatible database function to the BBS community. dBASE databases can be displayed online for up to 32 users simultaneously and database updates entered by callers are immediately visible to other callers on-screen. No special programming or provisions need be made to handle file record locking or access.

In addition to compatibility to dBASE databases, TDBS actually includes a dBASE development language compiler. The compiler allows system operators to write database applications using the dBASE application development language for online use. There are some programming functions peculiar to TDBS and a few dBASE functions not supported, but the claim of compatibility is close enough that dBASE programmers will have no difficulty in porting existing applications to TDBS with minor work.

The result has been the birth of third party add-on programs for TBBS written in dBASE. A number of games have already gained some popularity including versions of Card Guppies, Draw Poker, and Blackjack. One of the most popular is a version of Tradewars titled

StarQuest. Multiple online players can form teams, cruise the galaxy, trade various stellar commodities, and generally blast each other into the Next Generation online.

The new TDBS version increases operating speed 300% and adds a couple of crucial features. Support for dBASE III Plus memo fields adds the ability to access individual text files through the database. Clipper-style variable arrays actually go a bit beyond dBASE III Plus compatibility but was a much requested feature. Support for database indexing, complex expressions in index files, and the use of filters extend the capabilities of the language.

The result is that TDBS makes TBBS the most capable database publishing bulletin board system available. BBS are no longer limited to file downloads and text files to convey information. Real, interactive database searches on data that may already exist in dBASE format can now be presented online to multiple simultaneous callers. The 16-line version of the TDBS expansion module is priced at \$995 while the 32-line version is \$1495. The upgrade to 1.1 is provided free to registered owners of version 1.0. eSoft, Inc., 15200 E. Girard Ave., Suite 2550, Aurora, CO 80014; (303)699-6565; Support BBS at (303)699-9248.

SETUP YOUR U.S. ROBOTICS HST DUAL STANDARD FOR PERFORMANCE.

The U.S. Robotics HST Dual Standard modem has developed into the overwhelming modem of choice among BBS operators and the circle is widening. In their recent V.42bis upgrade to the DS,USR apparently had to go down into existing code and they appear to have snuck in some other improvements. Reports indicate that the once shaky connect sequence, which failed with many other V.32 modems on less than ideal lines and occasionally "got lost" in a number of other situations, is now inexplicably rock solid after the V.42bis upgrade is installed. According to Phil Becker, author of TBBS, a popular BBS software package, "They've done something besides just add V.42bis. From our testing, it looks and sounds like a whole different modem. It's solid."

One of the frustrating drawbacks of using the U.S. Robotics HST Dual Standard is the complex number of operating characteristics that can be modified in registers on the modem. Known as NRAM (Nonvolatile Random Access Memory), these "settings" allow you to store alphanumeric codes in the modem's memory to control various operational characteristics - everything from how long the modem should wait for a dial tone to whether or not the monitor speaker is on. Once this setup is completed, it will remain in memory. Although you can change the modem's operation temporarily with the usual Hayes AT command set, you can essentially reset the modem to whatever characteristics are stored in NRAM at any time with a simple ATZ command. Note that a hardware DIP switch 10 on the modem must be set to UP (the default) for this to work.

To recall all factory default settings, issue the AT&F command. You can then make any modifications to the current settings. Once you have the modem operating as you like, you can save all current settings to NRAM using the command AT&W. Anytime thereafter, you can recall the NRAM settings using a simple ATZ command. For most users, ATZ then becomes their initialization string with ALL software programs.

The problem is the sheer multitude of settings available. There are 22 S registers alone and 15 ampersand (&) commands in the extended command set in addition to the regular Hayes AT command set. This control set is extensive enough, USR included a command to let you examine the contents. If you enter ATI4, the modem will respond by printing an entire screen full of the current settings. ATI5, on the other hand, prints out all NRAM settings.

The settings are NOT simple or easy to understand. The user manual explanations of most of these are exceedingly technical in nature. An example is the explanation given for register S24 in the manual:

"Sets the duration, in 10-millisecond units, of the delay between RTS and the modem's CTS response in synchronous mode. Default = 10 msec."

AT15
USRobotics Courier 14400 HST Dual Standard NRAM Settings...

DIAL=PULSE B1 F1 M1 X7
BAUD=38400 PARITY=N WORDLEN=8

&A1 &B1 &G0 &H1 &I0 &J0 &K1 &L0
&M4 &N0 &P0 &R2 &S1 &X0 &Y0

S02=255	S03=013	S04=010	S05=008
S06=002	S07=060	S08=002	S09=006
S10=007	S11=040	S12=050	S13=000
S15=008	S19=005	S21=010	S22=017
S23=019	S24=000	S26=001	S27=000
S28=008	S38=000		

If you did know what this says, you might still not know what the ideal setting should be for any given situation.

The upshot of all this is mass confusion on the part of almost anyone using the modem. Even in the case of veteran system operators, few have ANY idea of what all the settings do. To get their new USR HST DS modem in operation, by far the majority of operators get a copy of the NRAM settings from one of their buddies who have a modem that does seem to be working.

As a result, there is a hot trade going on in many echomail conferences in NRAM settings. Every time someone gets the modem to work, they publish their NRAM settings in the echo. And results are extremely variable. One operator will get his USR HST DS to transfer files at 1500 characters per second (cps), essentially equivalent to 15000 bits per second (bps). Another operator gets only 950 cps and many otherwise knowledgeable people immediately begin advising him to upgrade his serial port since "his computer can't keep up with the modem."

The truth is that NRAM settings can be set to optimize performance. But finding a set that really works can be a search for the holy grail.

We finally turned to Gerry Westerberg, operator of **Microlink B BBS** (303)972-9600 here in Denver and Net Coordinator for FidoNet 104 for some help on this one. Gerry has spent the past 23 years as a radio station engineer and currently serves as Chief Engineer

at Y-108 radio station. As such, he's frequently called on to find the cause of various radio interference problems. These can often take days of methodical testing to eliminate one cause after another before reaching the real culprit and it takes a certain type of patient mentality to work in this field. Gerry had reported consistent file transfers in excess of 1900 cps using the U.S. Robotics HST Dual Standard. We wanted to find out why.

"I tried downloading NRAM settings published in the HST and other echoes. Most of them blew up in my face," says Gerry. "Finally, I bit the bullet and sat down and learned what each command did. Now, I CONSISTENTLY get 19000 bps in stopwatch-timed test transfers between my Dual Standard and Brian Bartee's Comm-Post BBS" [(303)534-4646].

We asked Gerry for permission to publish his NRAM settings. The accompanying table provides the full NRAM settings used. We were unable to duplicate the 1900 cps, but performance was good at around 1500 cps for us. Note that if you run a BBS and want to allow V.32 callers as well as HST, the B1 setting should be changed to B0.

ARC+ PLUS VERSION 7.0

There has been an increasing trend among shareware developers away from the concept of shareware distribution. Jim Button's PC-File, DataStorm's Procomm Plus, and Bob Wallace's PC Write have all gone to commercial distribution over the past year. In one sense, it is troublesome to see developers abandon the shareware world that gave them their start. This would be an easy target for our always effective posture of moral outrage and righteous indignation.

On the other hand, we can certainly understand the allure of moving to commercial distribution once they are in a position to do so. Commercial software distribution not only allows you to use

a software program, but to pay for it as well. This is a catchy concept particularly attractive to software developers who enjoy an occasional meal.

System Enhancement Associates has joined the crowd with the first commercial release of their long popular compression utility **ARC**. The company began shipments of version 7.0 of **ARC** during the first week of August. The big news here is the program, a shareware product for a number of years, is no longer. The new version 7.0 is actually titled **ARC+PLUS** and is headed for the retail distribution channel. It will not be available for download from electronic bulletin board systems. According to Thom Henderson of System Enhancement Associates, retailers wanted nothing to do with shareware and SEA wanted retail distribution.

The program does offer some enticing enhancements. Notable among them is its ability to archive large files across several diskettes. Currently, if you have a database of perhaps 5 MB for example, and you would like to carry it away on diskette, you would not likely force it onto a 1.2 MB or 1.44 MB diskette even with compression. A shareware program titled **SLICE.COM** has gained some popularity by allowing you to break up a large program into smaller segments and splice them back together later. With **ARC 7.0**, this extra operation is unnecessary.

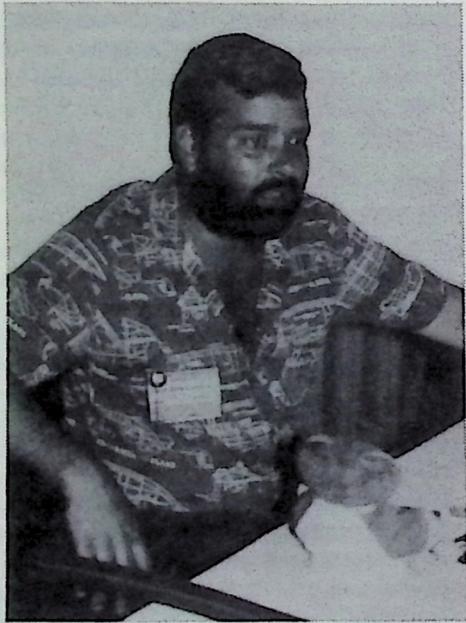
DOS maintains an attribute byte for each directory entry on your hard drive. Bit 5 of this byte is referred to as the archive bit. It is reset whenever a file backup is performed and set if the file is subsequently changed. **ARC** has the ability to read this byte to archive only files whose archive bit is set for example - changed files. With the multidiskette feature and the archive bit capability, **ARC** can essentially serve as one of the slowest, if most disk efficient backup programs on the market. That's not really the intended application but it does do an excellent job of backing up a handful of database files crucial to your business on a couple of diskettes.

The new version also provides a point and shoot interface titled **EZARC**. This program provides a mouse driven DOS shell allowing you to point at files and

add them to an archive, view archive contents, etc. It is quite easy to use and very effective.

The biggest improvement in ARC involves the degree of compression. It reduces files to the smallest archives of any compression utility we've seen - smaller than either PKZIP Version 1.10 or LHARC 1.13. It does so generally at the expense of speed - though not always so. Our test spread in the accompanying table illustrates this anomaly. Compared to PKZIP, we can make the statement that it is generally slower than PKZIP and usually markedly so. Our EXE files test shows ARCs 7 minutes and 4 seconds at twice the time required for PKZIP's 3 minutes 27 seconds. When it's not markedly slower, it's markedly FASTER than PKZIP. On database files, ARC came in at 5:33, almost three minutes FASTER than PKZIP while compressing the files further. These wildly variant results are interesting.

While PKZIP compresses data in one pass, we would conjecture that ARC is using a two pass method. The first pass, a Run Length Encoding process, reduces redundant data strings by finding



Thom Henderson of System Enhancement Associates.

"ARC is moving into the retail distribution channel."

like data (a series of spaces for example) and reducing them to symbols. A second pass would then perform the more conventional Huffman coding or Lempel-Ziv compression.

On data where the RLE process can find large amounts of redundant data, it can save enough work from the second pass to both compress the files better AND do it faster. On more random data files, such as .EXE or .COM files, it would generally be a wasted effort. This would explain why ARC is either quite fast, or quite slow rather than consistently one or the other. It might also explain the additional compression. The program features a /Q "quick" switch to speed things up a bit if you're in a hurry. This probably aborts the RLE pass.

On the total test of 376 files comprising about 15 MB, ARC saved 128 KB over PKZIP at the cost of an additional 1:50 in processing time. The differences in both size and speed were not particularly striking unless you are very pressed for disk space or very much in a hurry. Over a wide sample, the programs are nearly the same. On specific applications it is quite another story. Our test of Gannett New Media's USA TODAY daily news files shows about an 8% gain in compression using ARC (56,511 bytes versus 61,390). When transporting such files by telephone, this is a noticeable improvement saving 20-25 seconds of transfer time at 2400 bps. It is also more clearly at the cost of speed requiring 18.87 seconds to compress compared to PKZIP's 10.31 seconds.

While the performance you will experience using ARC is clearly dependent on the type of data you use it on, we found their claim to deliver the tightest file compression in the industry to be demonstrably true. The product comes with a reasonably easy to read, if uninspired, instruction manual. It is backwards compatible in that it will extract files from earlier versions of ARC although they will of course be unable to extract files created with the new version. Although the package is available only commercially, an XARC file extraction utility is made freely available for download on electronic bulletin boards. This utility will extract files from archives created by ARC+PLUS but will not create them. In this way, owners of ARC+PLUS can theoreti-

cally create archives and freely distribute the unarchive utility necessary to recover files from them.

It is doubtful that ARC+PLUS will return System Enhancement Associates to its former position as the eminent archive utility in the BBS community. But it does extend the range of file compression - we showed an average reduction in file size across the entire test set of over 62%. And for the many PC users and corporate users who do not use BBS, ARC+PLUS's availability off the shelf may be a big plus for them, and for System Enhancement Associates.

The retail price of ARC+PLUS is \$84.95. Anyone using any other archive program can print out the first page of the documentation and send it to SEA along with \$24.95 to receive a copy of the program. This deal actually makes ARC less expensive than the registration for most shareware programs. System Enhancement Associates, Inc., 925 Clifton Ave., Clifton, NJ 07013; (201)473-5153 voice. The company also operates a support bulletin board at (201)473-1991.

FIDONET - THE ORIGINAL BBS NETWORK

A review of the history of the BBS world is occasionally useful. New converts to the online world of electronic bulletin board systems, lacking a sense of the intricacies of how it evolved, are often a bit confused by the conventions and etiquette developed regarding their use.

One recurrent theme in the development of BBS systems is their urge to mate. Just as callers reach out in the night to connect with others of their species on local BBS systems, so BBS systems themselves also seek connections to their peers.

Large computer systems owned by governmental departments, corporations, and universities, were among the first to offer online services and likewise to begin the first tentative connections.

COMPRESSION UTILITIES COMPARISON

DATABASE FILES - 154 FILES - 4,218,880 BYTES

UTILITY	SECONDS	COMPRESSED	REDUCTION
ARC 7.0	333	988,390	76.57%
PKZIP 1.10	511	1,003,215	76.22%
LHARC 1.13	663	1,059,103	74.90%

EXECUTABLE FILES - 52 FILES - 3,168,256 BYTES

UTILITY	SECONDS	COMPRESSED	REDUCTION
ARC 7.0	424	1,783,662	43.70%
PKZIP 1.10	207	1,813,632	42.76%
LHARC 1.13	399	1,813,017	42.78%

WORD PROCESSING FILES - 160 FILES - 3,561,472 BYTES

UTILITY	SECONDS	COMPRESSED	REDUCTION
ARC 7.0	454	1,501,198	57.85%
PKZIP 1.10	243	1,482,194	58.38%
LHARC 1.13	397	1,563,230	56.11%

RANDOM DIRECTORY - 154 FILES - 4,460,544 BYTES

UTILITY	SECONDS	COMPRESSED	REDUCTION
ARC 7.0	468	1,539,977	65.47%
PKZIP 1.10	608	1,642,553	63.18%
LHARC 1.13	649	1,611,228	63.88%

TOTALS - 376 FILES - 15,409,152 BYTES

UTILITY	SECONDS	COMPRESSED	REDUCTION
ARC 7.0	1679	5,813,227	62.27%
PKZIP 1.10	1569	5,941,594	61.44%
LHARC 1.13	2108	6,046,578	60.76%

SAMPLE APPLICATION - 19 USA TODAY FILES - 122,880 BYTES

UTILITY	SECONDS	COMPRESSED	REDUCTION
ARC 7.0	18.87	56,511	54.01%
PKZIP 1.10	10.31	61,390	50.04%
LHARC 1.13	18.02	57,913	52.87%

MAKE MONEY*

YOU DON'T NEED A LOT OF MONEY

Without spending a lot of money or interrupting your present career, you can transform your personal computer into a profitable multi-line bulletin board and information host system.

These systems are being used worldwide for subscription matchmaking services, on-line catalogs, multi-user databases, and all kinds of other multiple listing applications.

YOU DON'T NEED TO BE AT&T

Although our bulletin board software is being used by major corporations such as Popular Mechanics, Continental Cablevision, and Ashton-Tate, they've chosen it for the same qualities that make it work for you. It's easy to operate and flexible enough to accommodate an incredibly wide range of uses.

Many of these systems are actually being run by people who operate them out of their homes while continuing to work full time.

YOU DON'T NEED TO BE A COMPUTER WHIZ

With the On-Line Store's software, you don't have to be a computer programmer to set up a fully customized paying system of your own. In fact, most of our success stories involve people *without* computer backgrounds.

CASE STUDY #1

Bruce Kamm: Metro On-Line

In less than a year, Bruce has developed a 16-line multi-user bulletin board system that provides social contact forums to paying subscribers throughout the Metropolitan New York area.

Bruce's system also has X.25 capabilities which serve as gateway to allow his subscribers access to a virtually unlimited array of other databases.

To see what's going on at the Metro On-Line, use your modem to call: 212/831-9280, (8/1/N).

IF YOU NEED MORE INFORMATION...

You're not alone! According to the Wall Street Journal, the information service industry is growing at a staggering rate. The 1990s are fast approaching with opportunities for those with the foresight to get involved now. To learn more about how you can take your work into the future — without investing a lot of money, call: 805/650-0188, or download the demonstration version from our bulletin board: 805/650-0193 (8/1/N). Or, if you like, fill out the form below and include \$10 for shipping and handling.

Demonstration disks, full documentation, case studies, a comprehensive "how to" handbook, and information about the On-Line Store's exclusive "instant business" add-on modules will be rushed to you via return mail.

*WITH YOUR PC.

For proper delivery, please complete:

Name _____

Address _____

City/State/Zip _____

Credit Card No./Exp. Date

VISA MC AMEX

()

Daytime Phone _____

Please make check payable to the ON-LINE STORE
Mail to: P.O. Box 3197, Ventura, CA 93003-3197



Your International Headquarters for BBS

But inevitably, the concept of online connections trickled down to the still infant world of personal computers.

On a snowy Chicago day in 1978, Ward Christensen stayed home from work and doodled with his home brew personal computer. The computer club he belonged to used a large cork bulletin board on a stand where members could post buy and sell offers of computers and their various piece parts at their meetings. This informal swap market was a key component of such clubs allowing members to freely swap and trade components - ridding themselves of no longer needed parts and obtaining parts needed to improve their usually home-built computers. Ward duplicated the cork board electronically posting ads from the cork board on his computer system and connecting it by modem. He called a club cohort and invited him to dial into the Computerized Bulletin Board System. The first user. He didn't leave any obscene messages, rudely demand an upgrade in status, or download all the files on the system. These traditions developed later on. This first BBS is still in operation on a CP/M system in Chicago as Ward and Randy's CBBS (312)545-8086.

Among Christensen's innovations was a file transfer protocol that would actually correct errors induced by telephone line noise. It did so by breaking the file into 128-byte blocks and checking each block as it was transmitted to make sure it arrived intact. Damaged blocks were simply retransmitted. The program was simply called the **MODEM** program. Eventually, various versions of **MODEM** received version numbers - **MODEM3**, **MODEM4**, etc. Eventually, it came to be called **XMODEM**.

Over the next few years, a handful of like systems sprang up across the country - mostly on CP/M (Control Program for Microcomputers) machines which were then quite the rage. And most of them were custom software actually written by the operator. At that time, software was often written and released into the public domain, complete with source code. Those who adopted these programs would revise and improve them and release them again. In this way, individuals each contributed to the development of the genre and the idea of charging for this group-developed software was not considered.

In 1981, IBM introduced their PC model and it caught on in a hurry. Among the early BBS programs available for the PC was a program titled **FIDO** written by Tom Jennings of San Francisco. An Indiana PC enthusiast named Kaplan got a copy of **FIDO** from Jennings and started a system there. A few others followed. In July of 1984, Jennings had a novel idea. What if he could write a message on one system, send it to another system as a file, and subsequently have the message displayed on the other system? He revised the software, sent copies to those who were using his software, and began sending out messages. The program used a telephone list to dial each Fido system in turn to deliver a broadcast message. To minimize the cost, he had the program dial the systems in the wee hours of the morning when the long distance rates were least expensive. The concept of netmail was born and in effect, the systems running Fido software became a network. **FidoNet** was born.

The software proved quite popular and the number of systems running Fido software increased weekly. The telephone list, known as a nodelist, was published sporadically and became an increasing task to compile. Eventually, the list of systems reached 250, the limits of the software. At that time, it was decided to break the network into regional sub-nets. A **FidoNet** system node address then became the local network number followed by a specific node number assigned to that BBS. Area Code 303 is home of a 112 member local network designated 104. The Boardwatch system is assigned node 555 and so our address is 104/555.

In the February of 1986, there were a number of Fido systems operating in the Dallas area. The sysops of the area had developed a tradition of meeting at local pizza parlors to discuss technical issues etc. To organize these parties, a local system operator named Jeff Rush developed a concept of "echoing" an entire local message area from his system to all the other local Fido systems as netmail. In this way, all boards in the area carried the same messages or conference on their systems. This was used as a common discussion area to plan the pizza parties.

Rush's echomail concept caught on like wildfire. Conversations on BBS systems could become extremely confusing with various callers writing messages and replying to messages in essentially random fashion. Conversations were difficult to follow. The obvious solution was to break the conversations into individual topical areas on the system. The problem with this concept was that if enough topical areas were constructed to cover all popular topics, the number of callers on any one BBS were spread pretty thin between them. There might be only two callers interested in Cooking for example.

By connecting the specialized conference topics to other similar BBS systems, the operators essentially pooled their callers. While there still might only be two callers on a system interested in cooking, if you connected these message areas on twenty systems, you had 40 aspiring gourmands engaged in a conversation. Callers could post a question on how to increase the grease content of a hamburger in Dallas and receive a reply from New York, Atlanta, or Anchorage. Within a year, virtually the entire network was carrying dozens of echomail conferences and **FidoNet** jumped off the map completely. Today, over 7600 BBS systems worldwide are members of **FidoNet** or one of the newer splinter groups derived from **FidoNet**.

Not only has **FidoNet** been continuously and immensely popular over the past six years, but it has developed a system of connection software in many ways superbly tuned to the Public Switched Telephone Network. Today a half dozen or more BBS software packages and another half dozen dedicated mail packages adhere to the **FidoNet** Technical Specifications to connect PCs. Systems request and send files, e-mail messages, and entire message conferences with virtually no intervention or supervision from their operators beyond the initial setup. This technology has been so successful that numerous private companies and government departments have quietly implemented it to connect geographically separated offices and provide communications with field personnel. While numerous firms struggle with LAN bridges, dedicated T1 circuits, and so forth to connect two or more sites, others are plodding along much less exotically, but

quite dependably through ordinary voice telephone lines using technology developed in the night by FidoNet hobbyists.

FIDO FACTS

FidoNet offers some unique qualities over anything else in the PC communications world. First, it is the largest and most organized network of PCs in the world. The FidoNet automatically re-examines itself each week to produce a very accurate list of members - the nodelist - published each Friday. This has to be the largest, most accurate BBS list in the world. It provides some fascinating information about the BBS world available virtually nowhere else.

Early in the history of Boardwatch, we dialed the local bulletin boards here in Denver with some vigor. By religiously dialing every BBS we could find in the area over a year or so period, we got pretty good at it. Many early BBS operators can attest to this in that we typically located them within their first week in operation. This enabled us to produce what was widely regarded at the time as the most comprehensive and accurate BBS list available for any city in the country. While BBS come and go like wildflowers, we were determined to find out exactly how many BBS operated in area code 303. Naturally, we never did. But we think we did come closer to that goal than any list in any city in the country. And it gave us a number that we needed quite badly. The ratio of FidoNet-style BBS systems to the total number of BBS in operation. We tracked this number for over a year and it held quite steady at about 37% of the total BBS population. Given that we were finding new BBS all the time, systems were going offline all the time, and existing systems were joining the local net all the time, we found it impressive that the ratio held true over a number of sample months.

Our readership forced us to change our focus to more nationwide scope some time ago. We no longer track the local BBS systems with anything approaching the accuracy we did then. We don't know for certain that 37% of the systems in the Denver area are FidoNet systems now and we didn't really know it then. We have no indication whether

or not that ratio holds true for other cities. But it was the best figure possible then and we don't think it's changed much since. Undoubtedly it will be a higher percentage in some cities and a lower percentage in others. But if we assume it is a typical figure, we can use it to calculate the total number of BBS systems in the world based on the FidoNet list.

So how many BBS are there? Gary Funk of Data Point BBS in Fayetteville Arkansas helped us compile some figures from the August 3, 1990 issue of the FidoNet, AlterNet, and Network nodelists. The figure of immediate interest was the total number of discrete telephone numbers listed worldwide - 7627. Using our ratio, this would indicate that there are 20,613 publicly available dial-up BBS systems in operation worldwide. In the United States and Canada, the nodelist indicates that there are 5160 discrete telephone numbers listed. Again using our admittedly questionable ratio of 37%, we would estimate the total number of systems in North America at 13,946.

One of the problems with counting BBS is deciding on what the definition of BBS is. The numbers above assume an online system operating on a personal computer, whose operator solicits and accepts telephone calls from anyone with a modem. But the BBS vendors we speak with are all unanimous in their estimation that they sell approximately two BBS systems to companies for private internal use for each one they sell for use as a public dial-up system. Counting these private systems, you can assume that roughly 61,839 systems are in operation worldwide and 41,838 systems operate in the United States and Canada.

We found some other interesting information in the August 3rd Nodelist. North America, by highest supported modem speed:

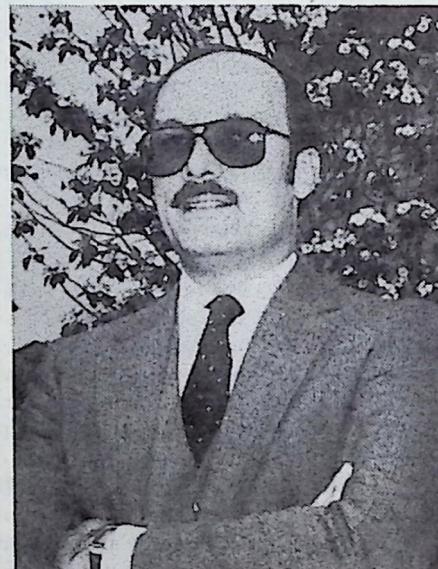
WITHIN UNITED STATES		
SPEED	NO.	%TOTAL
1200 bps	135	2.62%
2400 bps	3057	59.23%
9600 bps	1968	38.13%

Worldwide, by highest supported modem speed:

WORLDWIDE		
SPEED	NO.	%TOTAL
1200 bps	235	3.08%
2400 bps	4779	62.66%
9600 bps	2612	34.25%

As you can readily see, the move to 2400 bps has been accomplished with 3% or less of systems operating at 1200 bps and a strong move toward 9600 bps operation with over 38% of the BBS systems investing in the higher speed technology. And finally, there is one FidoNet BBS system operating at a top speed of 300 bps. It is titled *Avalon Northeast 2:256/36* run by Chris Tyson of Sunderland United Kingdom at 44-91-564-0009. Would someone please buy this man a modem or at least send him a netmail message informing him of the change in decade.

HAKALA AT LARGE



FAX/MODEM CARDS

by David Hakala

I hate wasting paper. When my daisy wheel printer broke down six months ago, I found I could easily get along

GW Associates

Communications and Messaging Systems Specialists

PRESENTS

The all new **Message Manager** for TBBS/TDBS systems. This program is the creation of Ben Cunningham, one of the pioneers in writing programs for The Data Base System (TDBS). Some of the highlights of this package are: Support for up to 10,000 message areas; SysOp configurable full screen editor; SysOp configurable reply quoting; the capability of editing messages after they are saved; the ability to perform any kind of maintenance while the BBS is on-line; the ability to import and export text while the BBS is on-line; users can change several message reading options at any time and save them to disk to make the changes permanent; users can subscribe to up to 60 message areas and see all the new messages in each area when they enter the message menu; message areas can be made to be anonymous (user name not in message headers); message areas can be configured to be auto-addressing (i.e. all original messages are sent to a specified name); complex and/or search capability on any combination of FROM, TO or SUBJECT fields; message text can be searched for strings; users are automatically notified of messages waiting at log-on or upon entry to a message area; carbon copies are supported; software uses unique transparent message threading; FidoNet format message import and export utilities are now being developed, etc. This program will be priced starting at \$179.00.

The extremely popular game of **StarQuest**. This is the first multi-player, multi-user space game to run under TBBS/TDBS. You can create a universe of a size that is best for your system and its users and your users create and capture settlements and become active wheeler/dealers across your universe. Their settlements can be attacked and captured whether the user being attacked is on-line or off, and as the users gain in strength and worth the computer controlled pirates and the tax assessor will be there to lend a helping hand. This on-line multi user

game has already proven itself to be popular with the users and it's not only a lot of enjoyment for them but it can quickly pay for itself on systems charging for access. This program is priced at \$149.95.

The powerful and productive **On-Line Sales Manager**. This on-line catalog sales program is written by Jeff Johnson, another pioneer in TDBS software, and it easily shows the power and capabilities of TBBS and TDBS. The Sales Manager will display a catalog of items for sale under categories you specify, each item can have a full descriptive text file attached to it and the user can place an order at any time and continue to browse through the catalog. When done the user selects to order and is presented with each item and given the opportunity to indicate how many are to be shipped. Once all items are ordered the software will check to see if the customer has an account, if not it will prompt for all necessary order information. Developed as a modular package this software will handle everything from a low level order entry system to a fully featured point-of-sale package that will print invoices, track inventory, track billing and do all the things you would expect of a full sales package. It really must be seen to be appreciated. This package starts at \$395.00.

There's a lot more available for the TBBS/TDBS SysOp, as well as for anyone interested in an Information System (BBS), all you need to do is call our system and browse through Our Demonstration and Sales Area and take the time to register as a customer. GW Associates offers full support to all SysOps and we have several excellent programmers available to help with your applications and customization. Please call our system at (508) 429-1784 (N,8,1) and keep up with our new releases or call us on our voice line at (508) 429-6227 if we can help you in any way. Installing commercial systems is our ONLY business, and we're good at it!

without it -- except when I dealt with the modem-deprived. Then I needed fax capability. A large number of businesses now own fax machines, providing a gateway through which we modem maniacs can send and receive information. The nice part is, we can use THEIR paper!

I also hate foot-tangling cables and desk-hogging external cases. Anything that can fit inside my PC goes there. So I shopped around for a fax board. I found many products include a modem on the same circuit card, nearly "free." But as with all computer products, it pays to know what you need and read the fine print before buying.

ONE-WAY FAX BOARDS

I saw quite a few deals under \$150, even one for \$90. Invariably, the fax component was "send-only." Vendors will tell you, "Market studies show 80% of fax use is in the transmit mode." Since a fax transmission requires a machine on both ends, common sense dictates that the number can't be much higher than 50%, else a lot of transmissions are just beamed into the ether. A send-only fax makes as much sense as a voice line that permits only outbound calls - and for the same reasons.

TRANSMISSION SPEED

Many of the deals in the \$130 to \$250 range were full send/receive fax systems, but too often speed was compromised in fax, data or both modes. Some devious vendors advertised "4800 bps modem with fax!" The 4800 referred to the fax speed, as second-rate as a 1200 bps modem. Don't settle for less than 9600 bps Group 3 fax compatibility and 2400 bps Hayes data compatibility.

SOFTWARE CONSIDERATIONS

Bundled software is de rigueur for fax/modems, just as it is for data modems. Like the half-baked comm programs bundled with most data modems, fax software is always suspect. Test-drive it before assuming it will meet your needs. Here are the features that should be included in fax software:

FORMAT CONVERSION

A fax transmission is a bit-mapped image, a collection of dots arranged in a way defined by the CCITT standard for facsimile data. Every file must be converted to fax format before you can send it. Most fax software automatically converts the following file formats to fax format for you:

ASCII: plain old text and some word processor formats. Be very skeptical here. I find little use for software that will convert Wordperfect v4.1, but not later versions. On the other hand, this can be one of the most useful conversions for E-Mail types. By drafting a bit of a memo in an ASCII editor and faxing it, it is very much like sending an e-mail message.

PCX: many "paint" programs, including PC Paintbrush create graphics files in this format.

TIFF: shortened to .TIF as a file extension. Used by many scanners and Microsoft Windows. Not to be confused with the TIFF's described below.

TIFF Class F: the file extension will be .FAX. It is a semi-standard fax format supported by Aldus, Microsoft, Everex and other software. Your bundled fax software may have to convert .FAX to its own peculiar fax format before transmission.

TIFF Bi-level and Pad-Bit: graphics files, also ending in .TIF, created by Logitech Paintshow and other scanners.

DCX: an Intel/DCA graphics file format. I haven't seen any yet.

IMG: a Digital Research graphics file format. Rather popular, it is used in Gem Artline, Ventura Publisher and other desktop publishing programs.

SEND/RECEIVE MODES

Have you noticed that when people say, "I'll fax it to you ASAP," they mean any time between now and tomorrow morning? Good fax software can operate in the background, so you needn't wait for the promised delivery. Watch the memory requirement for background operation. I tried some overblown programs that took 130 KB or more, leaving no room for foreground applications bigger than 320 KB. One "background" package insisted on displaying progress

messages in the middle of a database program I was writing, like a whining toddler with a death-wish.

Then there's your distant boss or client who says, "Drop what you're doing and fax it NOW!!!" Memory-resident fax programs pop up at the touch of a key, so you can send a fax without shutting down the program currently in use. Again, watch the memory requirement. You may be better off shelling to DOS from the current application and running the fax software from the DOS command line.

Fax software should support multiple file transmissions to the same phone number, just like batch upload/download protocols such as YMODEM. I haven't seen any fax software that permits wild card selection of files.

Merging files into one fax page is not the same as sending multiple files to the same receiver. If you send your logo and a letter in multiple-file mode, each will arrive on a separate page. File-merge lets you cut and paste several files together before transmission. Good software will let you specify at least one file, like your logo, that should be pasted to everything you send out.

Some fax software includes mail-merge capabilities, permitting personalization of form letters before transmitting them to a group of people (see "distribution list" below).

"Menu bypass" lets you send a fax file (or several) directly from the DOS command line, e. g. **FAXPROG -FARTICLE.ASC -FLOGO.IMG -P303-555-1111**. File conversion is handled automatically, and you are returned to DOS when the transmission ends. Such a feature is handy for batch files.

Look for automatic log/report functions. You will probably want to track when (and whether) faxes were sent or received, how long the phone line was in use, destination phone numbers, names and types of files sent.

You may have the option to automatically route incoming faxes to your printer. I can't imagine why anyone would. Junk fax is becoming a nui-

sance, and the ability to view a fax on screen before printing it is a delightful feature of fax boards.

SCHEDULING AND DIALING DIRECTORIES

You should be able to schedule unattended transmissions for any date or time. This feature lets you take advantage of off-peak phone prices.

Dialing directories in fax software contain much of the information needed for cover letters: name, company, phone number and usually a field designating a given entry as part of a "distribution group." Distribution groups make it easy to send one document to several parties. Press agents, sales managers and other memo-prone types appreciate distribution lists.

WHICH FAX/MODEM?

While the perfect software still eludes me, I did find a good deal in the Zofax 96/24 fax/modem board. Manufactured by Zoltrix and sold through Megatronics, the board costs just \$249. Not bad at all for all the hardware features described above.

I was a bit nervous about buying from Megatronics. Their 5-day return policy to avoid a 15% "re-stocking" charge does not convey confidence in their product line. But the Zofax has performed without problems in data and fax modes. Megatronics Inc.: 1094 No. Main Street, Logan UT 84321; (801)752-2642.

BBSING AS A BUSINESS PROPOSITION

by Tim Stryker

Setting up a BBS for business purposes is often thought to center around formation of a database of sufficient value to warrant charging the public for access. The charges can be hourly or flat-rate; the database can be Sysop-generated or user-generated; the "public" whose access is sought can be as wide as everybody or as narrow as "all female blue-

grass guitarists with a penchant for oral sex". But did you know that a much larger proportion of the business use of BBS's in the U.S. today is of a totally different type?

Publicly accessible BBS's grab all the headlines. They seek the limelight... and rightly so! Their survival depends on getting their phone numbers known to as many people as possible. However, my estimate of the proportion of BBS's used for internal, off-limits-to-the-public purposes is around 60%. If you eliminate single-line systems, so that all you are talking about is multi-user BBS's, my estimate jumps to 80%!

This means that for every multi-user system you see advertised or hear about from a friend, there are 4 more just like it out there "behind the scenes" in American industry and government. It's a startling thought. The BBS revolution that readers of this magazine have long anticipated is really underway.

Because of their strong inward focus, corporate and governmental BBS's typically shun publicity, and details of their operations are sketchy. These are systems that would have to change their phone numbers if they were ever published in an article like this one. Normally, the only lawful way to find out they even exist is to be a party to their particular specialized goals.

What are these systems used for, exactly? Typically, file transfer; SIGs (Special Interest Groups) with message and file areas dedicated to specific topics; private E-Mail between personnel at distant sites; and real-time teleconferencing in some cases. The Michigan Department of Commerce, for example, coordinates the agendas of the 50 individual state Public Service Utility Regulatory Commissioners via BBS. EPSON America keeps its dealer network up to date with the latest price changes, promotional opportunities, and driver software on its little 8-line system. The Army National Guard operates a small 5-liner out of Cheyenne, Wyoming for purposes unknown.

The key thing is that there are so many of these systems, compared to those that seek incoming calls from the public. This says that the majority of the profit-making use of BBS technology right now is intra-corporate and intra-depart-

mental. Small groups of innovative individuals are realizing that a BBS is the ideal answer to their unique information gathering or distribution needs. These individuals are then setting up BBS's, and the bottom line is that their companies or departments are deriving enormous financial gains from the operation of these systems.

I am constantly amazed at the number of orders and reorders for BBS software systems from corporate and government accounts, for systems you never see advertised or mentioned in the news in any way. What is clear from this is that the traditional BBS-as-a-business model of providing specialized public database access to anyone willing to foot the bill is only the tip of the business BBS iceberg.

[Tim Stryker is president of Galacticomm Incorporated, a major vendor of multiline BBS software systems. Mr. Stryker can be reached via the Galacticomm Support and Demonstration BBS at (305)583-7808 or by voice at (305)583-5990. Galacticomm, Inc., 4101 S.W. 47 Ave., Suite 101, Fort Lauderdale, FL 33314. - Editor]

LONG DISTANCE USA

UNIX TO PC GATEWAY

Last issue we did a fairly detailed article on passing E-Mail messages from Fido-Net systems to public E-Mail services such as MCI Mail and CompuServe via a Unix based network termed Internet. In passing, we mentioned a software program that allows an MS-DOS based PC to act as a gateway to the Unix Usenet world of UUCP (Unix to Unix Copy Program).

The package, titled UFGATE, was developed by Tim Pozar of San Francisco California and has become THE DOS/Unix gateway package of choice. The program is currently available in the file UFG_103.ARC - approximately 600 KB in size. The system listed as the Late Night Software support BBS in the aging documentation for this product was no longer in service. So we listed John Gilmore's sys-

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tem as a contact. It was up and John does in fact produce a utility for Late Night Software titled **UUSLAVE**.

Mr. Pozar called to our attention that they do have a Late Night Software BBS operating at (415)695-0759. The system uses Fido version 12n software - notable primarily in that few systems actually use the original Fido BBS software anymore. Since Tom Jennings, author of Fido was also from San Francisco, it is poignant that Mr. Pozar runs this program.

The system provides a number of echomail conferences and Usenet news groups online - including an echomail conference supporting the UFGATE program. A file area contains the latest release of UFGATE along with a series of utility programs, text files describing various aspects of tying into Unix networks and utilities to toss messages from UFGATE into various BBS message bases. We found a utility by Dave Hughes Jr. to interface UFGATE messages into QuickBBS/Remote Access systems for example. It could be that Dave Hughes Jr. is taking an interest into his fathers avocation as online elder statesman.

In any event, the Late Night Software Support system, while not visually overpowering, does a competent job of supporting this extremely ambitious and capable software program. If you have any interest in marrying your DOS based BBS to the Unix world to carry Usenet News Groups or send netmail through the world-wide UUCP and Interlink networks, these people have done a tremendous amount of work in creating a gateway that will save you a tremendous amount of work trying to duplicate from scratch. As far as we know, it is the ONLY full featured program addressing this important connection. A new release is imminent featuring faster connections and the ability to pass mail over Ethernet as well as Fido-Net and UUCP. Late Night Software, 671 28th Street, San Francisco, CA 94131; (415)695-7727 voice.

USDA GENETIC RESEARCH BBS

The Federal Government is our nations largest BBS system operator. Hundreds of governmental departments use electronic bulletin board technology for a variety of communications tasks and

several dozen are available for public use. We recently located one of the best examples of this in the U.S. Department of Agriculture's National Biological Impact Assessment Program (NBIAP) BBS system operating on a toll free number at (800)624-2723 and (703)231-3858.

The **NBIAP BBS** uses PCBoard software along with a door program titled **TEXTVIEW** written by Joseph Sheppard to produce what amounts to an online database of information using software with no database capability. With clever menuing and text files containing lists of information, the system offers one of the most cunning presentations of information we've seen given the limitations of the tools at hand.

Essentially, NBIAP is about Biotechnology and Genetic Engineering. While many BBS often advertise a specialized information theme, we're too often disappointed to find a couple of bulletins about their role in the field coupled with a very bland and general BBS offering some shareware downloads and the usual chatty message area covering how great it is to be online. Not so on this system. We were just overwhelmed with the breadth and depth of information crowding this BBS software to its limits on the subject of Biotechnology.

Immediately after logon, you will encounter their current news file. This is no little file telling how they survived the great disk crash of six months ago. It was actually an entire newsletter they publish monthly. Back issues are available for the past year. The thing scrolled through screen after screen of news. A new DNA probe developed by two microbiologists to detect Swine Dysentery in young porkers by reacting with the bacterium *Treponema Hyodysenteriae* if present in pig feces dramatically shortens the time required to test piggies for the disease. The USDA had recently granted a permit to Louisiana State University to conduct field trials on a genetically engineered strain of rice and another to Biotechnica Agriculture Inc. of Overland Park Kansas to test genetically engineered corn. An article by Mark Dibner Ph.D. of North Carolina Biotechnology Center described a new institute they were establishing on bioprocessing techniques titled the National Fermentation and Bioprocessing Institute (NFB) - (919)549-7569. It

also described a visit by Vice President Dan Quayle and the staff of the Council on Competitiveness.

The news file went on to describe patents granted on a new tomato protoplast fusion method and a new perennial rye grass titled REPELL that is more fungus resistant. We found the subject matter interesting, the file well written, and the coverage comprehensive. Apparently, the newsletter is published monthly online and back issues for the past year were available in the bulletins area.

The **DOORS** function contained a list of **DOORS** on various topics. When you opened one, it was actually a text view door that then listed a series of sub files. When we accessed any one of them, we were delighted to find massive lists of data on the topic at hand. One list contained literally hundreds of newsletters on biotechnology, genetic engineering, and related topics. Information on title, publisher, cost, address, and a paragraph summarizing coverage of the publication was very informative. Similarly, lists of current field test approvals, State Institutes devoted to the topic, State regulators and laws on genetic engineering, were available. A fascinating list of agricultural databases available online has to be the most comprehensive we've ever encountered. The area even contained a list of job openings in the field. Again, no little list of three jobs opened two years ago. Rather, a very detailed listing of what appeared to be dozens of current job openings both within the government and among private firms for researchers and biotechnologists listing the agency, a full description of the work, where to send resumes, and special application instructions.

In addition to being a free call on a fascinating subject, operators Sanjay Dhawan and Don King have assembled a thoroughly detailed and comprehensive data set on biotechnology issues to the point of straining the limits of their BBS hardware and software. For those interested in the rapidly emerging field of genetic engineering, this system is a superb resource.

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FEDERAL LIBRARY INFO NETWORK

FEDLINK, the Federal Library and Information Network operates an online service for librarians titled **ALIX II** (Automated Library Information eXchange II) at (202)707-9656.

The system runs on an IBM AT clone over four telephone lines using TBBS multiline system software. It provides a forum for exchanging information on library and information center automation programs, solutions to library/info center automation problems, and micro-computer experiences and techniques for librarians. Bruce Miller and Erik Delfino act as system operators.

ALIX provides a wealth of information on how to automate your library or information center. It includes an online electronic newsletter largely comprised of clippings from the Library of Congress Information Bulletin.

The system provides an online database of thousands of libraries located throughout the federal government participating in FEDLINK. Full mailing

address information is provided making this a virtual mailing list of every library association in the country.

The interesting thing about this system is that it deals with the nuts and bolts of presenting information online - ostensibly by libraries. But the techniques are applicable to anyone operating any type of online information system.

For example: we found a fascinating conference in progress dealing with optical-character-recognition devices/software to allow libraries to convert printed matter to an online format. A Palantir system was the current subject of hot debate. There was also a variety of software available of fairly narrow interest including a CDROM cost analysis in Lotus 123 and SuperCalc formats as well as a utility to convert BRS downloads (an online commercial database) to dBASE format and a voice telephone list of almost every Federal library in the country.

Finally, the system provides additional resource lists for other government BBS systems, and a list of BBS operated by libraries around the country.

ONLINE COMPUTER BOOKSTORE

There is nothing quite so calming as an afternoon browse through the local book store. One store here in the Denver area has been in operation for over a 100 years. It occupies four floors of a historic building and it's filled with deep leather chairs, homey reading lamps, and beautiful books and hundreds of periodicals on every conceivable topic. I love to spend hours there poring over the latest releases or browsing through sections bulging with books on subjects I know nothing about. Since it is completely out of the question for me to get in and out of The Tattered Cover in anything less than two hours, I actually don't go very often. I don't have two hours.

And not all shopping is as pleasant as those hours spent at book stores. The daily cattle drive down at K-Mart or Walton's turns the search for two AA batteries into a gauntlet of parking lot wars, grocery cart aisle battles, and finally a trip through a pinball machine of cash registers, flashing red lights, and rotund, gum chomping sales clerks with

beaded chains around their necks to hold their cat's-eye glasses in place. No matter what I purchase, one item in the cart becomes the price mystery of the day. The entire store stops and starts screeching into microphones for price checks, calling in clerks from the far corners of the store, and poring over old three-ring binders trying to divine how much it will cost me to escape the place.

As a result, I've become the preeminent mail order shopper. Hardware, software, clothes, books, music, whatever I can get by dialing an 800 number and chanting a credit card number into the phone. A week later, a big brown truck rolls up to my house and the merchandise is deposited on my front porch.

A friend recently recommended a book titled *Unix Networking*. While I do enjoy browsing through book stores, I never have much luck finding any particular title. And books on Unix Networking rarely make the New York Times Best Seller list.

But we may have found a solution. Austin Murphy and Associates of Sunnyvale California operate a book store. More to the point, they have started an online service titled *Online Computer Books* at (408)744-0514 using Galacticomm's The Major BBS software. We dialed the service and were very pleasantly surprised by what we found. Among other things, Unix Networking.

The system is very simple and very much to the point. They have a fairly good selection of Computer Books sorted out under categories such as Communications, Operating Systems, Languages, Word Processing, etc. The categories are further broken down into subcategories. Communications leads to LAN or Telecommunications options. Eventually, you tree down to a list of titles. Selecting a title then gives you a synopsis of the book, author, publisher, and price. After viewing a book synopsis, you can add the book to your purchase list.

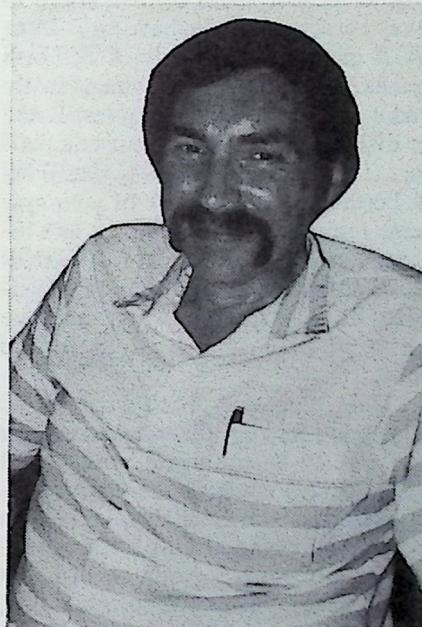
Once you've selected your books, you can review your order to delete titles, etc. The function will actually print out an order listing each book, the price, and shipping charges in what looks like,

and probably is, a shipping invoice. You simply provide a mailing address and your Master Card of Visa number.

We found the process to be one of the easiest online ordering systems we've found. Even better, the price on the books isn't bad. Our *Unix Networking* retails for \$29.95. Online Computer Book Stores listed it for \$25.76. Even with a very reasonable \$2 shipping, our total came to \$27.76 - more than \$2 off the list price - delivered to our door and with no sales tax. Their "specials" are a bit better yet. Dvorak's *Guide to PC Telecommunications* lists for \$49.95. Online Books carries it for \$34.95.

Best of all, they do searches. We've also been looking for a copy of John Quarterman's *The Matrix: Computer Networks and Conferencing Systems Worldwide*. Simply leave Mike Jamison, the system operator, a message describing the book you're looking for and they will try to locate it. Austin Murphy & Associates, 528 Weddell Drive #5, Sunnyvale, CA 48076; (408)744-0511 voice.

DR. FILE FINDER



Taking A Look At Back & Forth

by Dr. File Finder

In this busy world of ours there seems to be a lot of interest in getting things done. In the world of computers, this

interest is focused on faster machines, faster hard disk access times, faster modems, and anything faster. Everyone wants to try to be more productive -- to get as many things done as possible. That aim leads inevitably to consideration of multitasking environments.

Sure, DESQview from Quarterdeck Office Systems and Windows 3.0 from Microsoft do the job. Unfortunately, not everyone, in fact not even the majority of users, has the hardware to support such programs. Things like a 386 machine, several megabytes of extended or expanded memory, and the like. And truthfully, how many of us really NEED multitasking?

And, there is a viable alternative -- task-switching. Unless you use Windows 3.0 in "386 enhanced mode" that's exactly what Windows is - a task-switcher, NOT a multitasker.

There is an excellent new shareware task-switching program available called *Back & Forth*. It can easily make you more productive without requiring tons of disk space and megabytes of memory. Let's take a look at *Back & Forth*.

Simply defined, *Back & Forth* is a "task switching" program. What does that mean? Basically, it allows you to have many programs all loaded at the same time. Rather than exiting from one program and loading another to switch to another function, you load both of them at the beginning and simply "switch" back and forth between them using some defined keystroke. This is done by creating "windows" or "partitions" using your DOS RAM, expanded memory, disk space, or a combination of these.

For example, you could have your word processor loaded in window number 1, your communications program in window 2, a spreadsheet in window 3, and so on. The benefits are obvious. *Back & Forth* allows you to move "back and forth" between them saving you time and effort and maximizing your system resources.

Think about it this way and assume that you are not using *Back & Forth*. You are in your word processor doing some work. You realize that you have to call a BBS to get some information. So, you

save your document, exit the word processor, and load your communications program. You make your call and get what you need. Now you have to exit the communications program, load your word processor, and go back to what you were doing.

With Back & Forth, it's much easier. You have the word processor in one window and your communications program in another. When you need to call the BBS you simply toggle over to the communications program which is waiting for you in another window. Make your call, log off, and then toggle back to your word processor. Look at the number of steps you've saved. Sound good? Back & Forth can do much more.

There are several commercial "task switching" programs, but they don't offer all of the things that you get with Back & Forth. Back & Forth has an excellent setup menu where you can define memory usage, disk usage, the "hot keys" to be used, and how many windows to open. Note that you control how much RAM is used, how much EMS, and how much disk space -- and what drives to use. This puts you in full control of your system resources. Back & Forth only uses an average of 14K of DOS RAM and it can be loaded into "high memory" where it only uses 1K! For defining the "hot keys" you actually get a true representation of the keyboard and as you select keys they are highlighted. Very slick indeed.

You can also set the hot-keys for the cut and paste function. Yes, Back & Forth has a cut and paste feature that lets you cut copy things from one window to another. For increasing your productivity, the "cut & paste" feature is really excellent. Let's take a quick look at that.

It's always nice to be able to take some information from one program and put it into another one. Back & Forth's cut and paste function is very well done and allows you to alter the format so that data can be transferred more easily. For example, you can cut a block of cells from a spreadsheet and store it with ending carriage returns and then cut text from a database and store it in word processor format. If you were to then paste the cut buffer into a word processor, the spreadsheet cells would be in a rectangle format and the word proces-

sor could paragraph format the text from the database. This is a really nice feature and makes cutting and pasting much neater. The cut and paste function is currently being upgraded so that in the future you'll even be able to save graphics screens! Quite an impressive addition to an already great feature of Back & Forth.

The commercial task switching programs do the job of task switching and that's about it. Not so with Back & Forth. This is a task switcher with a mission. It includes 4DOS compatibility, key click option, DOS command line editor, keyboard accelerator, configurable colors, screen blanker, and enhanced mouse support.

Another feature of Back & Forth that I've not found in the commercial programs is that it will "cleanup" EMS (Expanded Memory Specification) behind itself. Thus, when you close a B&F window, any EMS memory it was using is reclaimed for your use. With Back & Forth you get an excellent task switching program plus a carload of extra utilities besides -- and it doesn't hog all your RAM. A great job of programming.

Other task switching programs require a great deal of RAM or disk space to swap out screens if you have an EGA or VGA graphics adapter. Back & Forth can handle these types of screens easily and uses approximately 66% less RAM or disk space than its closest competitors. This is just another way that Back & Forth optimizes the use of your systems resources -- doing things as efficiently as possible. Nothing is wasted. Back & Forth can use up to 16 Megabytes of swap space and you can have up to 20 B&F windows open at one time.

If you are looking for a quick way in software to increase productivity and efficiency by cutting hundreds of keystrokes from your workday, you might want to look into a task switching program. And with regards to efficient RAM usage, features, configurability, and total functionality, Back & Forth beats out anything in the shareware or commercial software arena. The authors, Shane and Sandi Stump, work constantly to improve the program and actively solicit the input of users. Their BBS number is (512)670-0954 and you

can reach them voice at (512)670-1061. This is another program that's on the move and rapidly gaining popularity among all levels of users. Registration is \$69.95. Progressive Solutions, Inc., PO Box 276125, San Antonio, TX 78227. Orders only: (800)833-4400.

WHAT'S NEW ON PRODIGY

by Dr. File Finder

Since November 1988, when Prodigy first became available commercially, the number of users has grown to over 440,000. Prodigy continues to fight off a fair share of unfavorable comments, but has gradually been getting more favorable press. The Yankee group is releasing their annual report on online information services and are devoting a separate chapter to Prodigy. Prodigy has been identified by them as a unique service that will potentially play a critical role in the online information service field.

If Prodigy deserves credit for any single accomplishment it's probably the fact that it has grown from zero users to over 440,000 in a little over 20 months. Of course, their huge financial investment in the service no doubt has played a role in this growth. No matter what the reason, this tremendous growth is important. Prodigy has demonstrated that users want low cost, flat rate online services.

The marketing and PR people at Prodigy are quick to point out that Prodigy is targeted for non-technical users. In fact, people who don't even have computers have picked up on the idea of using Prodigy. Prodigy has helped sell a fair share of systems to this computerless group who wanted to track the 100 shares of AT&T they got from Grandma, look at the weather for their vacation, get baseball scores on the opposite coast, and so on. There is something appealing about the use of color and graphics, an easy way to find your way around, and of course, the low monthly price.

Besides the original IBM compatible product, a Macintosh version has now been out since November 1989. No support for the Apple II series is planned at this time.

The variety of services available on Prodigy is really astounding. For example, you can do your banking while online. That's a nice feature when you consider that you can transfer some money so that you can then go do some grocery shopping as well! Entire chains of supermarkets are tied into Prodigy. Type in your order and it's sent to the store nearest to you. Wait a bit and then just go pick it up. Sounds almost like something from a 60's Sci-Fi novel, doesn't it?

After you've done your banking and shopping you can go and visit the online brokerage. Check out the stocks and see how you're doing. See that you've just made a killing? Good, because then you could go over and do some online shopping. The variety of goods available is amazing and all you have to do is place your order, charge it to a credit card, and it gets shipped to your home. All of these many services add to the appeal of Prodigy. Another factor is that it's easy to use. My 9 year old daughter, Kadee, went on Prodigy the first time and in no time she was whipping through the menus like a seasoned veteran.

Advertisers like Prodigy and find the users on Prodigy are a good target for hawking their wares, many times at discounts and offering the convenience of ordering real time. No phone calls, or cards to mail. You can find a wide variety of services available. Book a hotel room for your vacation, find out the best deal on leasing a car, and much more.

Prodigy is especially good for families with children as well. There is an area called "The Club" where young people can leave messages to other users who are in the same grade and/or age group. Fifth graders can exchange notes with other fifth graders and those who are getting ready to go into junior high can get advice from others who have already made the transition. My oldest daughter, Melaina, found an area of "The Club" that's dedicated to literature. I sat here watching her one night and was fascinated by what some of these young people were discussing. Comic books and Bart Simpson? No! The works of authors like Hemingway, Dickens, L.M. Montgomery, and even Danielle Steel. They also exchange poetry and short stories that they have written which the others critique. A great medium! My two daughters like

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Prodigy so well that I'm going to have to get another modem so that they don't keep stealing my machine. Yes, there's something for everyone on Prodigy and it seems that a great number of people really like what Prodigy has to offer.

If all of this weren't more than enough, Prodigy has a number enhancements planned that won't be available until Fall, 1990. A lot of value for the \$9.95 monthly rate and really worth looking into. Prodigy Services Company, 445 Hamilton Ave., White Plains, NY 10601; (800)759-8000

WHAT'S GOING ON WITH GENIE?

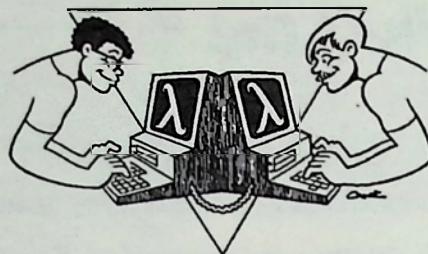
by Nick Anis

GENIE, the General Electric News And Information Exchange, was started in 1985. Headquartered in Rockville, Maryland, GENIE runs on several NEC mainframes owned by GE Information Services. GENIE also has its own proprietary network and does not use other networks like Telenet or Tymnet. Their commercial service is marketed under the name of Marknet. GENIE has over 2400 nodes -- more than any other national network. There are nodes in more than 550 U.S. cities and over 500 of these offer 2400 baud access.

There is a special terminal program available for accessing GENIE called Aladdin. Aladdin makes it easy to navigate around GENIE, to read and reply to mail, download files, and much more. The current version of Aladdin is 1.2. Version 1.3 should be out in August. Features will include changes to the GENIE menu system and some minor bug fixes. At one time a commercial program, there is now no charge for Aladdin and it is available online. It can also be found on many bulletin boards.

The program was originally written by Bret Mulvey in 1987. Bret found that he simply didn't have time to work on the program and just abandoned it. Aladdin was then acquired by the sysop of the IBM RT. They formed a company called Aladdin Software, Inc. In early 1990, GENIE bought all their rights to the programs from Aladdin Software and decided to offer Aladdin as a free program. Neil Harris, market development manager, estimates over 1/3 of GENIE IBM PC users use Aladdin as their terminal program to access GENIE.

GENIE has continued to grow at a steady pace. It currently has 206,000 subscribers and it's estimated that by 1991 that this number will go over 230,000. GENIE is preparing to introduce a new pricing structure that may stimulate even greater growth.

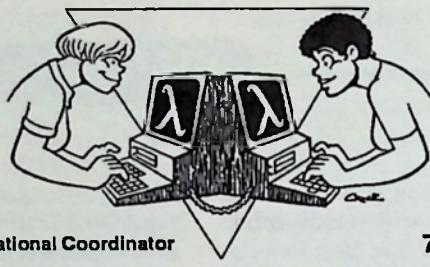


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Currently, GEnie's non-prime time rates are \$5.00 hourly for 300 baud, \$6.00 for 1200 baud, and \$10.95 for 2400 baud. The new 'package' would change the rate for 2400 baud callers to \$6.00 also, thus encouraging them to access GEnie at 2400 baud. This will give 2400 baud users a 40% savings while letting them access twice as much data as they could at 1200 baud. What's the rest of the 'package'?

GEnie is going to bundle 100 services for a flat, monthly subscription fee of only \$4.95. This will be similar to what is provided by Prodigy but at half the price. They don't want to compete with Prodigy and they certainly don't want to outspend them. GEnie's market research shows this is what people want and the price is right.

The package will include sending and receiving electronic mail, Groulier's Encyclopedia, Easy Saabre, single player games, and more. It will also include GEnie news and administrative features, password check, news, weather, and sports information, and access to all of the stores in GEnie's online 'Shopping Mall'. Subscribers to the plan will also be able to get closing stock quotes (as of close of market), and

will have access to all of the BBS's in the Leisure, Professional, and GEnie support topics. These would be things like Science Fiction RT, Scuba RT, Medical RT, and about 18 more.

The areas not included in the package are all of the computing RT's, the software libraries, chat and real time conference areas, any of the multiplayer games, and financial services. Thus, GEnie is giving away as many services as they can afford to for a low monthly flat rate.

GEnie's RT's support a large number of different computers like the Macintosh Mac II's - Amiga, IBM Compatibles, and more. A tour of their client services would reveal that a wide range of different computers are being used by the staff. Their belief is that client services has to be familiar with these various machines. GEnie prides itself on their knowledge of all the different platforms that they support. There are hundreds of sysops on GEnie and yet the majority of them have never met, but engage in 'telecommuting'.

Imagine*Nation is another relatively new service on GEnie. This is a world of the imagination that was created in an

online chat area setup like a text adventure. One of the early users of I*N (as it is usually abbreviated on GEnie) was a young woman by the name of Shari Bellamy. Shari spent a good deal of time there and was quite active. In Imagine*Nation many things are possible and Shari had a little house where she could meet people and talk. Shari died suddenly in February. GEnie held an online wake for her in the I*N area. As a symbolic tribute to Shari, GEnie kept the little house in place and now some memorial items are in the house, placed there by GEnie members. Despite the fact that this is all online, it has meaning to the people who visit I*N. GEnie is truly a friendly network. GE Information Services, 401 N. Washington St., Rockville, MD 20850; (800)638-9636.

STOCK OF THE WEEK

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BOARDWATCH MAGAZINE

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Advertise your electronic bulletin board/online information service in Boardwatch Magazine. Let our readers know who you are and what you're doing with online technology. To order a BBS ad in the Boardwatch Classified BBS ad section, call the Boardwatch Online Information Service at (303)973-4222 and use our online ad entry system. In addition to standard list information, you may enter up to 255 characters of text describing your online service. - all for \$25 per month. Master Card or Visa.

Bruce's Bar & Grill 203-236-3761 West Hartford Connecticut since 08/83. Sysop: Bruce Lomasky. Using TBBS 2.1M via 24 lines on MS-DOS 80386 computer with 300 MB storage. U.S. Robotics at 14400 bps. Fee:\$ None. Bruce's Bar and Grill has a similar atmosphere to TV's "Cheers". Public, Private, and Over 21 Conference Sections. Many regulars stop by and chat each day. Many online games (some multiuser real time) and thousands of IBM files. Hayes/Telebit/USR 9600

HH Info-Net 203 246 3747 New Hartford, Connecticut since 01/86. Sysop: Lee Winsor. Using PCBoard 14.5 via 8 lines on MS-DOS 80386 computer with 1600 MB storage. U.S. Robotics at 19200 bps. Fee:\$75 2Annually. Connecticut's finest BBS for professional, technical and business software for the IBM PC. MS Windows and OS/2 our sepcialty. Thousands of files for download and hundreds of Interlink, Smartnet, Fidonet, & other conferences for your enjoyment.

General Information Systems (GeniSys) 215-887-6600 Philadelphia, Pennsylvania since 04/89. Sysop: Robert Malerman. Using Galacticomm 5.10 via 17 lines on MS-DOS 80386 computer with 680 MB storage. Supra at 2400 bps. Fee:\$0.36 Hourly. Exciting - Multi Line Chat service! User registry, Multi Player Games!, Special Interest Groups, and Much Much more! Call today for fast paced action. Starlink node 9581. PC Pursuit node PHLPA. GeniSys-When your modem deserves the VERY BEST!

PC-OHIO PCBOARD 216-381-3320 Cleveland, Ohio since 09/85. Sysop: Norm Henke. Using PCBoard 14.5/U via 9 lines on MS-DOS 80386 computer with 1980 MB storage. U.S. Robotics at 9600 bps. Fee:\$30 Annually. The Best BBS in America. Over 20000 ZIP files on-line. Each node a dedicated 286 or 386SX computer. Large Adult file section. ProDoor, ProBank, MegaMail and MarkMail doors. Free access for members of ASP. Call 216-381-2115 for USR HST DS.

Pinecliffe BBS (303)642-7463 Pinecliffe, Colorado since 01/85. Sysop: Craig Baker. Using OPUS 1.13 via 4 lines on MS-DOS 80386 computer with 1200 MB storage. U.S. Robotics at 19200 bps. Fee:\$NONE Annually. FREE BBS! (But for \$20/yr get TWO HOURS PER DAY & NO DOWNLOAD LIMIT!) Lots of files, some oddball echomail conferences. Many Online games & tournaments! Sysop usually available for chat. 9600 bd HST line at (303)642-0703. Come help us grow!

Chicago Syslink TBBS 312-622-4442 Chicago, Illinois since 06/81. Sysop: George Matyaszek. Using TBBS 2.1M via 7 lines on MS-DOS 80386 computer with 80 MB storage. Multitech at 2400 bps. Fee:\$20 Annually. Multi-Purpose System Catering To Business/Service Users. Online Chat Mode, Games, Magazines, National Echo Conferences, MicroMatch/Find A Friend, Voted as #1 BBS for IL. & #20 for USA. Call ANYTIME and have some FUN for a change!

Data Point! 501-442-8777 Fayetteville, Arkansas since 01/83. Sysop: Gary W Funk. Using TBBS 2.1M via 4 lines on MS-DOS 80286 computer with 260 MB storage. U.S. Robotics at 9600 bps. Fee:\$30 Annually. Data Point! has multi-line chatting, on-line publications, and multi-player games. Large library of SDN, SDS, and TDN files. Support for MS-DOS, Commodore, and Amiga.

TBBS/TDBS/TIMS and TMail support. NetWork, FidoNet, and UUCP message areas.

Cul-de-Sac Bar & Grill 508-429-1784 Holliston, MA since 03/85. Sysop: Pete White. Using TBBS 2.1M via 5 lines on MS-DOS 80286 computer with 380 MB storage. U.S. Robotics at 14400 bps. Fee:\$45.00 Annually. The home of many TBBS/TDBS software packages, and an almost continuous beta site for many TBBS/TDBS software authors. Like Ben Cunningham's 10,000 message system with full screen editing and quoting, and Jeff Johnsons On-Line Sales Manager.

The Livewire BBS 609-866-2551 Mt. Laurel, New Jersey since 08/89. Sysop: Richard Paquette. Using PCBoard 14.E via 3 lines on MS-DOS 80286 computer with 400 MB storage. U.S. Robotics at 14400 bps. Fee:\$. Features the LiveStore with 20+ Product Departments for On-Line ordering with Visa/MC. Home of: BBS Caller's Digest, The LiveStore, Discount Magazine Door. Boardwatch, USA Today, Info-Mat, Zip Beep and Business Sense. 80+ Doors, Games, Conferences.

GLIB - Gay & Lesbian Information Bureau 703-578-4542 Washington, DC since 06/86. Sysop: Jon Larimore. Using TBBS 2.1M via 15 lines on MS-DOS 80386 computer with 720 MB storage. U.S. Robotics at 14400 bps. Fee:\$35 Annually. GayWay To Your World. Free to members of gay community groups. GayCom National Network. Computer SIGS, ShareWare, current news, info files, support services. Live real-time chat. PC Pursuitable. StarLinkable.

BOARDWATCH

NATIONAL LIST OF ELECTRONIC BULLETIN BOARD SYSTEMS AND ON-LINE INFORMATION SERVICES - SEPTEMBER 1990

SERVICE	PHONE	DESCRIPTION	SPONSOR/SYSOP	LOCATION
Access LA!	.....	Adult Multiline Chat System - Games - Magazines - Downloads	Michael Allen	Monrovia, CA
ADA Information Clearinghouse	(800)468-8386	Information on ADA Programming Language/Military Specs	Department of Defense	Washington, D.C.
ANARC BBS	(202)694-0215	World Radio/TV Handbook - Short Wave Freq Lists/Schedules	Assoc. of North American Radio Clubs	KS
Applied Modeling Research RBBS	(913)345-1978	Environmental Protection Agency Atmospheric Models	William Peterson/EPA	Hurdle Mills, NC
Aquila BBS	(919)541-1325	2 GB 9 Nodes V/MC/Amx Metrolink Pursuitable IL/CHI	Kevin Behrens/Steve Williams/Chris Babb	Aurora, IL
Ashton-Tate Technical Support	(708)820-8344	dBase and Multimate Support - CIS HOST NAME:ATBBS	Ashton-Tate Corporation	Torrance, CA
AST Technical Services BBS	(213)324-2188	Superb support system for AST Computer Products	AST Research Inc.	Irvine, CA
AT&T Support BBS	(714)727-4723	Support for PC 6300 and Other AT&T PC Models	American Telephone/Telegraph PC Division	Plainfield, NJ
Audiophilic Network	(201)769-6397	High-end Audio Components, Music, Video Reviews	Guy Hickay/Quatre Speakers	Van Nuys, CA
Automobile Consumer Services	(818)988-0452	New Car Pricing Reports - Used Car Value Reports	Automobile Consumer Services Inc.	Cincinnati, OH
Baud Town	(513)624-0552	Relaxed, Friendly Social BBS- USA Today/Newsbytes/Boardwatch	Linda Saenz/Fred German	Granada Hills, CA
BBS Press Service	(818)893-0340	Home of INFOMAT Online Weekly PC News Magazine	Alan Bechtold/BBS Press Service	Topeka, KS
BellSouth's TUG Gateway	(913)478-9239	Transtext Universal Gateway - Atlanta Journal-Constitution	BellSouth	Atlanta, GA
Best Friends BBS	(404)594-3984	DLX Multiline Chat/Match Social/Sexual	Ann and Joe Wiseman	Fountain Valley, CA
Big Peach BBS	(714)832-5902	Home of Automenu and Treeview Software	Marshall Magee/Magee Enterprises	Norcross, GA
Big Sky Telegraph	(404)446-6650	Education/Econ Development info to Montana rural Communities	Montanna Rural Education Network	Dillon, MT
Bit Bucket Software BBS 104/501	(406)683-4317	Home of EinkleyTerm Mail Software	Bob Hartman	Aurora, CO
BMUG BBS	(303)683-4217	Support for Macintosh owners - files - conferences.	Berkeley Macintosh Users Group	Berkeley, CA
Book BBS	(415)849-2684	Information on 2000 Computer Books - 800 order number	Business & Computer Book Store	Willow Grove, PA
Boston Citinet	(215)657-6130	City of Boston Information Service - Advertising Supported	Advanced Videotext Systems	Boston, MA
Brown Bag Software BBS	(617)439-5699	Power Menu/PC Outline Software Support	Brown Bag Software	Campbell, CA
Bruce's Bar & Grill	(408)371-7654	24-line Social System - Chat - Games - Downloads	Bruce Lomasky	West Hartford, CT
ButtonWare BBS	(203)236-3761	PC-File dB / PC-Calc / PC-Type Software Support	Jim Button/ButtonWare	Bellevue, WA
C.A.R.L. Library Service	(206)454-2629	Citations to 2 Million Texts in Colorado Library System FREE	Colorado Alliance of Research Libraries	Denver, CO
Canada Remote Systems	(303)863-1350	Probably Canada's largest BBS/Online Information Service	Jud Newell	Toronto, Ontario
Castle Tabby 107/412	(416)232-0442	Home of TABBY Fidonet Interface Program for Apple Macintosh	Michael E. Connick	Bradley Beach, NJ
CatHouse BBS 206/2901	(201)988-0706	MultiLine Support System for Wildcat BBS Software	Mustang Software	Bakersfield, CA
Census Bureau Office Automation	(805)395-0650	Microcomputers and Office Automation	US Dept. of Commerce/Navins Frankel	Suitland, MD
Census Bureau Personnel Division	(301)763-4574	Employment Opportunities Within the Census Bureau	US Dept. of Commerce/Navins Frankel	Suitland, MD
Channel 1	(617)354-8873	Thirty-line PCBboard System - 2.5 Gigabytes	Brian Miller/Tess Heder	Cambridge, MA
Chicago SysLink	(312)622-4442	Special Interest Areas for Ferret/Per Owners, TRS80/Aviation	George Matyaszek	Chicago, IL
Classi Computer Fieds	(317)359-5199	Online System for Classified Advertisements	Steve Edsal/Trader Newspaper	Indianapolis, IN
Clean Air BBS	(408)298-4277	Environmental Health/Cigarette Smoking Topics	American Lung Association/Sheila Blash	San Jose, CA
Cleveland Freenet	(216)368-3888	Cleveland City Information/Ohio Governor's Office Online	Case Western University/AT&T/Ohio Bell	Cleveland, OH
COCONET	(619)456-0815	COCONET Support/Demo - HiRes Graphics BBS for Unix Systems	Brian and Patricia Dear	La Jolla, CA
Computer Business Services	(714)396-0014	Computer Columnist John C. Dvorak's office BBS	John C. Dvorak and Nick Anis Jr.	Diamond Bar, CA
Computerized Bulletin Board Sys	(708)849-1132	First Electronic Bulletin Board - Creator of XMODEM Protocol	Ward Christensen	Chicago, IL
Computing Canada Online	(416)497-5263	Adjunct to Excellent Canadian PC Newspaper	Computing Canada Newspaper	Willowdale, Ontario
Corporate Data Exchange (CDX)	(609)683-4422	PR Newswire/ Business Wire. Logon: hello user.cdx	LaFountain Research Corp/Facil LaFountain	Princeton, NJ
Crosstalk Communications BBS	(404)740-8428	Product Support for Crosstalk for Windows/MK4/XVI	Digital Communications Associates	Roswell, GA
CTC IEEE Employment Database	(508)263-3857	Online Database of 20,000 Resumes for Engineering	Career Technologies Corporation	Andover, MA
Cul-de-Sac Bar & Grill	(508)429-1784	Multiline Service - Ham Radio - Humor - Echomail - Games	Pete White	Holliston, MA
Dante Project BBS	(603)643-6310	Commentary/Research on Dante's Divinia Commedia	Dartmouth College	Hanover, NH
Data Point	(501)442-8777	Online Publications - Excellent T BBS System	Gary Funk	Fayetteville, AR

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DataLink RBBS System	(214)394-7438	Weather Satellite Imaging, NOAA Satellite Tracking-AMSAT-NA	Dallas Remote Imaging Group/Jeff Wallach	Carrollton, TX
Dean's Office	(201)279-7048	Business and Education System - Small, but excellent	Dean Frank Relotto	Clifton, NJ
Dr. Dobbs Listing Service	(603)882-1599	Source Code from Dr. Dobb's Journal, MIPS, and DBMS Mag.	M&T Publishing/Computer Metrics	Redwood City, CA
Economic Bulletin Board	(202)377-3870	Economic Statistics/GNP/CPI/EMPLOYMENT, Trade Opportunities	US Department of Commerce	Springfield, VA
Eesti BBS #1	7 0142 422583	First BBS in USSR - Estonian Business Issues	Lembit Pirl/Estonian Business Assoc.	Tallinn, Estonia
Electric Dialectic BBS	(708)705-6774	40 Online Game Doors - Graphic Files	Bruce Johnson	Palatine, IL
Energy Info Admin E-Publications	(202)586-8658	Variety of Petroleum/Coa/Electricity Energy Statistics	US Department of Energy	Washington, D.C.
EXEC-PC	(414)789-4210	Largest BBS in US - 90 Lines - 70,000 files - 4 Gigabytes	Bob Mahoney	Shorewood, WI
Executive Network	(914)667-4567	Interlink Netmail National Host - Multiline PCBBoard System	Andy Keavens	Mt. Vernon, NY
Farwest BBS	(604)381-3934	Large Western Canada Galacticomm Info System	Ren l'Ecuayer	Victoria, BC
FCC Public Access Link	(301)725-1072	Equipment Authorization Status Advisory Service	Federal Communications Commission	Columbia, MD
Federal Job Information Center	(313)226-4423	Federal Job Opportunity Lists available online	US Office of Personnel Management	Detroit, MI
FEDELINK ALIX II	(202)707-9656	Info on Federal Libraries - Excerpts Library of Congress News	Federal Library Information Network	Washington, D.C.
Fido Tech Stand	31-30-719994	Fidonet Technical Information for Holland	J.J. van der Maas	Utrecht, Holland
File Cabinet BBS	(215)678-9854	10-line PCBBoard System. 959 MB-100 Conferences-80,000 files	Dan Bair	Wyomissing, PA
FOG City BBS 125/10	(415)863-9697	Gay Community BBS - AIDS Info - Desktop Publishing - MACs	John Friel III	Cedar Falls, IA
Forbin Project, The	(319)233-6157	Home of QModem SST Communications Software	US General Accounting Office/Sherry Lee	Washington, D.C.
GAO Bulletin Board	(202)275-1050	Lotus/dBase/Word Perfect User Tips	Community Educational Svcs. Foundation	Arlington, VA
GLIB	(703)578-4542	Gay and Lesbian Information Bureau - 11 Lines - 9600 bps	Dick Dillman/Greenpeace	Houston, TX
Greenpeace Environet	(415)861-6503	Ecological and Peace Issues - Disarmament/Toxics/Wildlife	Paul Meiners/P&M Software	Atlanta, GA
GT PowerComm BBS	(713)772-2090	Home of GT Power Communications Software	Purdue Univ. Agricultural Computer Net	Norcross, GA
Hay Locator	(317)494-6643	Database of Hay/Straw Suppliers and Buyers	Hayes Microcomputer Products	Philadelphia, PA
Hayes Advanced Systems Support	(800)874-2937	Customer Support Line for Hayes Customers. V-series/Ultra	Mark Miller	New Hartford, CT
HerpetNet/Satronics TBBS	(215)698-1905	Reptile and Amphibian Studies - Poison Snakes/Toads/Fish	Lee Winsor	Atlanta, GA
HH Info-Net: BBS	(203)246-3747	MS Windows and OS/2 Files our specialty	IBM National Support Center	Milpitas, CA
IBM Users Group Support BBS	(404)988-2790	IBM PC User Groups Database - Newsletter Exchange	Western Digital/Nan Coley	New York, NY
Imaging GraphicsLine BBS	(415)968-1834	Paradise/Vericom Graphics Products - GIFs	Harry Newton Publications	Lexington, KY
Inbound/Outbound/Teleconnect	(212)989-4675	Telephone Sales Trade Magazine Online Service	Daniel Diachun	Hillsborough, OR
Infinity World	(606)271-6556	8 line Galacticomm System - Many good text publications	Intel Corporation PCEO Division	New York, NY
Intei Support BBS	(503)645-6275	Support for Intel PC Products - Inboard 386/AboveBoard 286	Mike Susseli	New York, NY
Invention Factory	(212)431-1194	27 Lines - 100 Directories - Good Shareware Catalog	Don Shepherdson	Bellevue, WA
Investor's Online Data	(206)285-5359	Online Investment/Stock Market Information/Tech Analysis	U.S. Dept. of Navy / Chris Buechler	Arlington, VA
JAG-NET	(202)325-0748	Navy Judge Advocate General's Information Network	JDR Microdevices	San Jose, CA
JDR Microdevices BBS	(408)559-0253	Online Hardware Order - Catalog - 1.1 GB Files - Quizzes	Alpha Systems Inc./Bill Griffin	Roswell, GA
JOBBS	(404)992-8937	Online Job Listings - 2186 Technical Pos. - 10,000 Corps.	Federal Reserve Bank of Minneapolis	Minneapolis, MN
KIMBERELY BBS	(612)340-2489	Prime Rate-Fed Funds-T-Bill-Discount Rate-Economic Data	Artisol Inc.	Tucson, AZ
LANtastic BBS	(602)293-8065	Support for LANtastic local area network	Tim Pozar	San Francisco, CA
Leading Edge Auto Info Line	(508)836-3967	Support for Leading Edge Computer Owners	Leading Edge Computer	Westborough, MA
LegalEase	(509)326-3238	Legal Issues/Forms - Law BBS List	Bill Sorcinelli	Spokane, WA
LUMINA	(612)626-2206	Libraries of Univ. of Minnesota Integrated Net Access7E1VT100	University of Minnesota	Twin Cities, MN
Maxi-Micro TickerScreen	(212)809-1160	2000 Closing Stock Quotes/Market Research/Order Entry	Max Lite & Company	New York, NY
Micro Foundry, The	(415)598-0498	520 MB Downloads - Growing to Become the Best - Boardwatch	Thomas Nelson/Clickwork Software	San Jose, CA
Micro Message Service	(919)779-6674	USA Today/BoxOffice Magazine - Large Download Area	Mike Stroud	Raleigh, NC
Microlink B	(303)972-9600	1 Gigabyte of IBM Software - Multiline - USA Today News	Girard Westerberg	Littleton, CO
Microrim Technical Support BBS	(206)881-8119	Support for Popular R:Base Relational Data Base System	Microrim Corporation	Redmond, WA
Minnesota Spacenet	(612)920-5566	Minnesota Space Frontier Society - NASA News	Ben Hussei	Minneapolis, MN
Monu-CAD BBS	(607)264-3307	CAD Designs for Tombstones, Monuments, and Memorials	Jim Falivene/Monumental Computer App.	Cherry Valley, NY
MusicNet	(301)946-6796	CD Catalog, Music News, Music Files, Top 40 Listings	Mike James - Multimedia Software	Mount Airy, MD

BOARDWATCH MAGAZINE

NATIONAL LIST OF ELECTRONIC BULLETIN BOARD SYSTEMS AND ON-LINE INFORMATION SERVICES - SEPTEMBER 1990

SERVICE	PHONE	DESCRIPTION	SPONSOR/SYSOP	LOCATION
NARDAC BBS	(804)445-1627 Zenith Computer Support - List of Federal Micro User Groups	Navy Regional Data Automation Center	NAS Norfolk ,VA
NASA Headquarters Info Tech	(202)453-9008 Shareware and Technical Info for NASA PC users.	National Aeronautical and Space Admin.	Washington ,DC
NASA Spacelink	(205)895-0028 NASA Educational Affairs Div. - Flight Data/Space History	Marshall Space Flight Center	Huntsville ,AL
Nashville Exchange	(615)383-0727 8 line TBBS - Games/TDBS Software Development	Ben Cunningham	Nashville ,TN
National Agricultural Library	(301)344-8510 Agricultural Info/Research Resources	US Department of Agriculture	Beltsville ,MD
National Genealogical BBS	(703)528-2612 Family History - Genealogical Research - Gravestone Haunting	National Genealogical Society	Arlington ,VA
National Inst.Science Technology	(301)948-5717 Micro Elect.Info Exchange - Virus Protection/Security Issues	National Inst. of Science and Technology	Gaithersburg ,MD
National Publishers Exchange	(813)989-1087 Headquarters for NPE Newsletter - Desktop Publishing	Ed Aborn	Tampa ,FL
Nautlius BBS	(316)365-7631 32 Line TBBS with 5 GB of Files on 80486. CD/WORMS	Nautlius Communications	Iola ,KS
NAVWIESA	(202)433-6639 Naval Weapons Engineering Support	Dept. of Navy / Bill Walsh	Washington ,D.C.
Network World Bulletin Board	(508)620-1178 LAN and WAN Issues and Technology	Network World Magazine/CW Communications	Framingham ,MA
Neuropsychology Bound 157/3	(216)356-1431 Support Groups for Disabled/Physically Impaired	Butch Walker	Rocky River ,OH
NIST ACTS	(303)494-4775 Automated Computer Telephone Service - Sync PC to NBS Time	Nat. Institute for Standards/Technology	Boulder ,CO
NOAA Space Environment Lab	(303)497-5042 Solar Flare/Geomagnetic Data Online	National Oceanographic/Atmospheric Admin	Boulder ,CO
Numisnet	(301)498-8205 Collecting of Coins, Medals, and Exonumia	The Mitchell Group	Laurel ,MD
OERI BBS	(800)222-4922 Educational Statistics and Data - Performance Stats -	US Department of Education	Washington ,D.C.
Old Colorado City Communications	(719)632-4111 Political Discussions - Unix UUCP Public Access - Multiline	Dave Hughes	Colorado Springs ,CO
Online Computer Bookstore	(408)744-0514 Online Database/Orders for Computer Book Titles	Austin Murphy & Associates Book Store	Sunnyvale ,CA
Online Now	(807)345-5522 5 CD-ROMS plus 3MB New Software per Week	Gary Walsh/Torn Haavisto	Thunder Bay ,Ontario
Online Sports	(716)688-6537 Large base of Sports Stats for Pro Gamblers	Terry Mcraith	Williamsville ,NY
Online With Hayes	(404)446-6336 Hayes Public Bulletin Board - Conferences/SIGS/Support	Hayes Microcomputer Products	Norcross ,GA
Oracle PC	6108 260-6222 South Australian TBBS Multiline System	Don Crago	Pooraka ,South Australia
Osprey's Nest	(301)989-9036 Birdwatching, Bird Feeding, Naturalist/Ecology Issues	Fran and Norm Saunders	Colesville ,MD
PacComm BBS	(813)874-3078 Packet Radio Equipment Supplier - TNC/PSK Modems	Gwyn Reedy/PacCom Inc.	Tampa ,FL
PC Ohio	(216)381-3320 Shareware library with 100% USR HST access - 5 years up	Norm Henke	Cleveland ,OH
PC Pursuit Information	(800)835-3001 Unlimited LD Calls to 34 US Cities - \$25 Flat Monthly Rate	Telenet Communications	Reston ,VA
PDSLO BBS	(516)938-6722 Home of THELIST - Listing of 3000 Nationwide BBS Systems	Jim Toro	Hicksville ,NY
PHYSICS Forum BBS	(413)545-1959 Physics and Astronomical Sciences	Univ.of Mass. Dept. of Physics/Astronomy	Amherst ,MA
Pinecliffe BBS 104/28	(303)642-7463 Large Shareware Library/Echomail Conferences since 1985	Craig Baker	Pinecliffe ,CO
PKWare BBS	(414)352-7176 Home of PKZIP 1.10 Compression Utility	Phil Katz/PKWare Incorporated	Glendale ,WI
Pleasure Dome	(804)490-5878 Sexually Explicit Fantasy Chat System - Adults only	Tom Terrific	Tidewater ,VA
Popular Mechanics Online BBS	(212)582-8369 Automotive, Home/Shop, Electronics/Photography, Science	Popular Mechanics Magazine	New York ,NY
ProComm Support BBS	(314)474-8477 Home of ProComm 2.4.3 and ProComm Plus Comm Progrms	Thomas Smith/DataStorm Technologies Inc.	Columbia ,MO
Public Brand Software BBS	(317)856-2087 Commercial Shareware Vendor	Public Brand Software	Indianapolis ,IN
Radio Electronics BBS	(516)293-2283 Radio Electronics Magazine Online Adjunct	Gernsback Publications	Farmingdale ,NY
Random Access Information Svc.	(503)761-8100 10500 IBM/MAC/AMIGA Files - 3000 MaxPic Graphics	Janice Stevens	Portland ,OR
RGB Computing	(519)824-3997 Multiline Information Service/PC Sales/Large File Selection.	Ronald Sperner - RGB Computing	Guelph ,Ontario
Rose Media	(416)733-2780 Excellent Canadian PC Board System-Publications/Conferences	V/c Kass	Willowdale ,Ontario
Rusty & Edies	(216)726-0737 Large ML PCBoard run by Husband and Wife - NFL/Tradewars	Rusty and Edwina Hardenburgh	Boardman ,OH
Salt Air BBS	(801)261-8976 Home of PCBoard BBS Software - National List of PCB Sys	Clark Development Company/David Terry	Murray ,UT
Science Resource Studies BBS	(202)634-1764 Federal R&D Budget - Technical Labor Market Statistics	National Science Foundation	Washington ,D.C.
Scooter's Scientific Exchange	(215)657-5586 Biotechnology/Chemistry/Physics/Astronomy/Space Sciences	Brian Moldover	Willow Grove ,PA
SEAboard	(201)473-1991 Support system for ARC, SEADOG, and AXE software.	System Enhancement Associates	Wayne ,NJ
Seagate Technical Support BBS	(408)438-8771 Installation and Specifications for Hard Drive Models	Seagate/Shelley Toich	Scotts Valley ,CA

Sistema Profesional Informacion	.....	525 590-5988	Largest BBS in Mexico - Spanish Language TBBS	.....	Mexico City ,
Society for Technical Comm. BBS	.....	(703)522-3299	STC Job Service, Freelance Registry - Technical Writers	.....	Washington ,D.C.
Sonshine Express BBS	.....	(408)946-7362	Family Oriented Christian BBS	.....	Fremont ,CA
Sound Advice BBS	.....	(816)436-4516	Twenty Line PCBoard with 2 Gigabytes Storage - HST Modems	.....	Gladstone ,MO
State and Local Emergency Mgmt.	.....	(202)646-2887	Hazardous Materials/National Dam Watch/Emergency Info	.....	Washington ,D.C.
Take 3 BBS	.....	(602)482-1001	Reviews of Movies/Videos/ Film Industry Job Clearinghouse	.....	Scottsdale ,AZ
Talk Channel	.....	(818)506-0620	DIX-Based Multiline Chat/Talk Service - Sexual Orientation	.....	North Hollywood ,CA
TAXACOM	.....	(716)896-7581	Botany, Herbaria, FLORA ONLINE Newsletter, Latin Translation	.....	Buffalo ,NY
Taxonomic Reference File	.....	(215)972-6759	Online Bacterial Name Database - ORACLE Door	.....	Philadelphia ,PA
TBBS Net 104/23	.....	(303)699-9248	Home of The Bread Board System (TBBS) BBS Software	.....	Aurora ,CO
Telegodzilla	.....	(503)621-3746	Home of ZModem File Transfer Protocol/YModem/YAM	.....	Portland ,OR
Telix Support BBS	.....	(416)439-8293	Support Service for Telix Communications Software	.....	West Hill ,Ontario
Texas State Law Library BBS	.....	(512)463-1371	Online Legal Periodicals and Citation Database	.....	Austin ,TX
That Old Frog's Swamp	.....	(715)362-3895	Zen Buddhist Monk/PC Consultant	.....	Rhineland ,WI
The Back Room	.....	(718)849-1614	America's Largest Exclusively Gay DB - Home of Gaycomm	.....	Richmond Hill ,NY
The Business BBS	.....	(213)477-0408	Microsoft Windows Support	.....	Los Angeles ,CA
The Ledge PCBoard	.....	(818)352-3620	Home of Textview Door for PCBoard Systems	.....	Tujunga ,CA
The LiveWire BBS	.....	(609)866-2551	Online Magazine Subscription Orders/BBS Callers Digest	.....	Mt. Laurel ,NJ
The Other BBS 1:1/0	.....	(717)657-2223	Fidonet Zone Coordinator for North America 1:1/0	.....	Harrisburg ,PA
The Well	.....	(415)382-7190	Unix Conferencing System - \$8 monthly plus \$3 hourly	.....	Sausalito ,CA
TurboTax Support BBS	.....	(619)453-5232	Income tax information - Turbotax 1040 program support	.....	San Diego ,CA
U.S. Robotics - Sit UBU Sit	.....	(708)982-5092	Support for US Robotics HST 9600 bps Modems	.....	Skokie ,IL
Unutex Communications BBS	.....	(201)673-1367	United Nations Press Releases - Unitez News	.....	Glen Ridge ,NJ
US Naval Observatory BBS	.....	(202)653-1079	Time - Date - Sunrise - Sunset - Enter @TCO for Commands	.....	Washington ,D.C.
USA Today Distribution Service	.....	(303)973-4222	Distribution Service for USA Today/Newsbytes/Boardwatch	.....	Littleton ,CO
USA/GDR Databank	.....	(202)529-0140	News from East Germany, Rumania, USSR, Czechoslovakia	.....	Boardwatch Magazine
USAID/NBIAP BBS	.....	(800)624-2723	Biological Impact Assessment - Genetic Engineering/Biotech	.....	Council on USA/German Democratic Repub.
USGS Quick Epicenter Determin.	.....	(800)358-2663	Earthquake Epicenter Data - Geomagnetism7E2	.....	U.S. Department of Agriculture
USNO Time of Day for Clocks	.....	(202)653-0351	Xmits ASCII Time String - Sync Your PC to USNO Atomic Clock	.....	US Geological Survey Earthquake Info Cnt
UT Library Online Catalog	.....	(512)471-9420	Online Library Card Catalog Listing 3.5 million entries	.....	US Dept. of Commerce US Naval Observ.
VA Property Listing BBS	.....	(602)640-2371	List of VA held property foreclosures	.....	University of Texas at Austin
Vacation Florida Database	(407)839-0333	Florida Tourism Information/Database of Campsites/Hotels	Austin ,TX
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Ye Olde Bailey	(713)520-1569	Legal Issues Regarding RBOC Relations with Info Services	Bellerica ,MA
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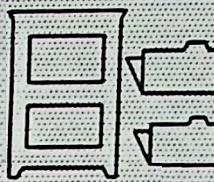
Name you will use for BBS Logon:

First _____ Last _____

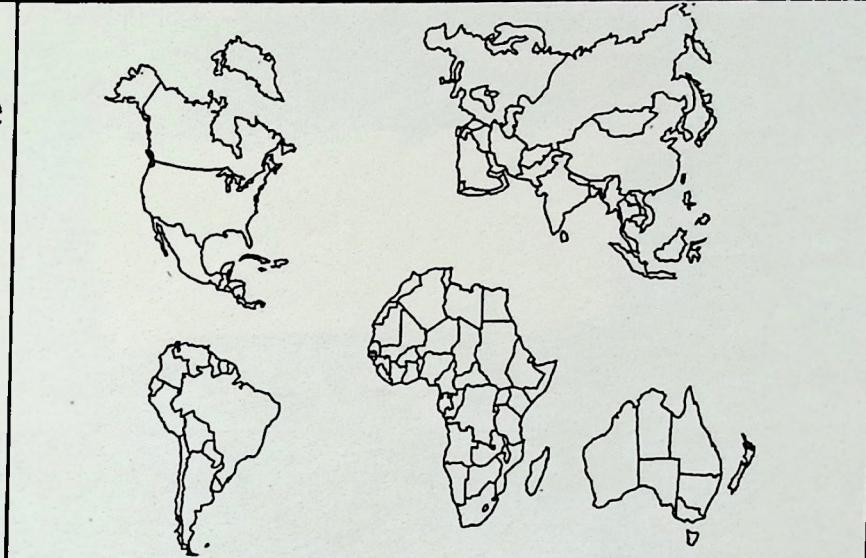
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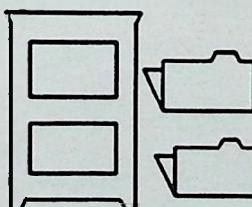
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